

C
M66uZd
1909/10

The
University of Minnesota
Bulletin

College of Dentistry

1909-1910



Volume XII

January 30, 1909

No. 1

Entered at the Postoffice
in Minneapolis as second-class matter
MINNEAPOLIS, MINN.

The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, the college or school of the University concerning which information is desired should be stated. Address,

THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota.

CALENDAR FOR 1909-1910

1909

1910

JULY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..

AUGUST

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..

SEPTEMBER

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..
..

OCTOBER

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

NOVEMBER

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..

DECEMBER

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..

JANUARY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

FEBRUARY

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	..	..	..	..	..
..

MARCH

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..

APRIL

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
..

MAY

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..

JUNE

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..
..

University Calendar

1909-1910

THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

1909

Sept. 7	Tuesday	Registration begins
Sept. 7-12	Week	Entrance examinations, condition examinations, registration.
Sept. 14	Tuesday	First semester begins
Oct. 4	Monday	University Council meeting
Oct. 4	Monday	School of Agriculture session begins
Oct. 7	Thursday	Board of Regents meeting
Nov. 25	Thursday	Thanksgiving Day, recess three days
Dec. 6	Monday	University Council meeting
Dec. 14	Tuesday	Board of Regents meeting
Dec. 18	Friday	Holiday recess begins 5:40 P. M.

1910

Jan. 4	Tuesday	Holiday recess ends 8:30 A. M.
Jan. 22	Saturday	Semester examinations begin
Jan. 29	Saturday	Semester examinations close
Jan. 31	Monday	Registration for second semester closes
Feb. 1	Tuesday	Second semester begins
Feb. 12	Saturday	Lincoln's birthday, holiday
Feb. 22	Tuesday	Washington's birthday, holiday
March 25	Friday	Good Friday, recess two days
April 4	Monday	University Council meeting
May 5	Thursday	Board of Regents meeting
May 30	Monday	Decoration Day, holiday
May 31	Tuesday	Semester examinations begin
June 4	Saturday	Semester examinations close
June 5	Sunday	Baccalaureate service
June 6	Monday	University Council meeting
June 6	Monday	Senior class exercises
June 7	Tuesday	Phi Beta Kappa address 8:00 P. M.
June 7	Tuesday	Senior Promenade 9:00 P. M.
June 8	Wednesday	Alumni Day
June 8	Wednesday	Board of Regents meeting
June 9	Thursday	Thirty-eighth annual commencement
June 10	Friday	Summer vacation begins

The School Year for 1910-11 will begin Tuesday, September 13

PROGRAM—ENTRANCE EXAMINATIONS
1909-10

Sept. 7	Tuesday	9 A. M.	Astronomy Botony Geology Chemistry Physiography Zoology
		2 P. M.	American Government History Political Economy Physics
Sept. 9	Wednesday	9 A. M.	English
		2 P. M.	German French Latin Scandinavian
Sept. 10	Thursday	9 A. M.	Elementary Algebra Commercial Geography
		2 P. M.	Higher Algebra
Sept. 11	Friday	9 A. M.	Plane Geometry
		2 P. M.	Solid Geometry

All candidates for examinations should report at the scheduled time in Room 13 Library Building.

The University

THE UNIVERSITY OF MINNESOTA comprises the following named schools, colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

THE COLLEGE OF AGRICULTURE

THE SCHOOL OF AGRICULTURE

SHORT COURSE FOR FARMERS

THE DAIRY SCHOOL

THE CROOKSTON SCHOOL OF AGRICULTURE

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY

THE COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.

The Board of Regents

CYRUS NORTHROP, LL.D., MINNEAPOLIS	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS	1914
The President of the Board	
The HON. JOHN A. JOHNSON, ST. PETER	<i>Ex-Officio</i>
The Governor of the State	
The HON. C. G. SCHULZ, ST. PAUL	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL	1909
The HON. A. E. RICE, WILLMAR	1909
The HON. B. F. NELSON, MINNEAPOLIS	1910
The HON. PIERCE BUTLER, ST. PAUL	1910
The HON. CHARLES A. SMITH, MINNEAPOLIS	1910
The HON. S. M. OWEN, MINNEAPOLIS	1913
The HON. W. J. MAYO, ROCHESTER	1913
The HON. HENRY B. HOVLAND, DULUTH	1914

C. D. DECKER, MINNEAPOLIS,
Secretary of the Board

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL. D., PRESIDENT
ERNEST B. PIERCE, B. A., REGISTRAR
JAMES T. GEROULD, B. A., LIBRARIAN
C. D. DECKER, PURCHASING AGENT
J. D. BREN, CASHIER

THE COLLEGES

JOHN F. DOWNEY, M.A., C. E., DEAN OF THE COLLEGE OF SCIENCE,
LITERATURE AND THE ARTS
FREDERICK S. JONES, M.A., DEAN OF THE COLLEGE OF ENGINEERING
AND THE MECHANIC ARTS
JOHN W. OLSEN, B.S., DEAN AND DIRECTOR OF THE DEPARTMENT OF
AGRICULTURE
WILLIAM S. PATTEE, LL.D., DEAN OF THE COLLEGE OF LAW
FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., DEAN OF THE
COLLEGE OF MEDICINE AND SURGERY
EUGENE L. MANN, B.A., M.D., DEAN OF THE COLLEGE OF HOMEOPATHIC
MEDICINE AND SURGERY
ALFRED OWRE, D.M.D., M.D., DEAN OF THE COLLEGE OF DENTISTRY
FREDERICK J. WULLING, Phm.D., LL.M., DEAN OF THE COLLEGE OF
PHARMACY
WILLIAM R. APPLEBY, M.A., DEAN OF THE SCHOOL OF MINES
GEORGE B. FRANKFORTER, Ph.D., DEAN OF THE SCHOOL OF
CHEMISTRY
GEORGE F. JAMES, Ph.D., DEAN OF THE COLLEGE OF EDUCATION
HENRY T. EDDY, C.E., Ph.D., LL.D., DEAN OF THE GRADUATE SCHOOL

ADA L. COMSTOCK, M.A., DEAN OF WOMEN

The University Council

At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be The University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

Representatives to the Council

The University

PRESIDENT CYRUS NORTHROP

The College of Science, Literature and the Arts

DEAN JOHN F. DOWNEY

PROFESSOR JOHN H. GRAY

PROFESSOR J. C. HUTCHINSON

PROFESSOR H. F. NACHTRIEB

PROFESSOR NORMAN WILDE

The College of Engineering and the Mechanic Arts

DEAN FREDERICK S. JONES

PROFESSOR GEORGE D. SHEPARDSON

The College and School of Agriculture

DEAN JOHN W. OLSEN

PROFESSOR HARRY SNYDER

PROFESSOR SAMUEL B. GREEN

The College of Law

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

The College of Medicine and Surgery

DEAN F. F. WESBROOK

PROFESSOR THOMAS G. LEE

The College of Homeopathic Medicine and Surgery

DEAN EUGENE L. MANN

The College of Dentistry

DEAN ALFRED OWRE

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

The School of Mines

DEAN WILLIAM R. APPLEBY

The School of Chemistry

DEAN GEORGE B. FRANKFORTER

The College of Education

DEAN GEORGE F. JAMES

The Graduate School

DEAN HENRY T. EDDY

The Dean of Women

ADA L. COMSTOCK

General Alumni Association

DAVID P. JONES

University Council Committees

The University Auditing Committee

PROFESSORS RASTALL, FLETCHER, SIGERFOOS, SPRINGER,
WASHBURN

The Committee on Athletics

PROFESSORS PAIGE, HARDING, D. P. JONES, LITZENBERG,
ROBINSON

The Committee on Grounds and Sanitation

PROFESSORS FLATHER, BASS, BRACKEN, FLETCHER, FRANKFORTER,
RANDALL, WESBROOK

The Committee on Catalogue, Programs and Courses of Study

PROFESSORS GRAY, FLETCHER, A. E. HAYNES, JOHNSTON, SNYDER,
E. B. PIERCE

The Press Committee

PROFESSORS SCHAPER, BEACH, CONSTANT, JOHNSTON, ROBINSON

The Committee on Commencement and other University Functions

PROFESSORS NACHTRIEB, JAMES, KIRCHNER, PATTEE, RANDALL,
SCHLENKER, DR. SCOTT, WILDE

The Committee on Student Entertainments and Social Affairs

PROFESSORS FRANKFORTER, BASS, CLEMENTS, COMSTOCK, COOKE,
OWRE, PIKE

The Committee on University Relations to other Institutions of Higher Learning

PROFESSORS DOWNEY, BOTHNE, EDDY, GRAY, GREEN, JAMES,
LEE

The Committee on University Extension and University Lectures

PROFESSORS WEST, HAECKER, JUERGENSEN, RANKIN, SHEPARDSON

The Committee on the Library

PROFESSORS EDDY, FLETCHER, F. S. JONES, LEE, REYNOLDS,
VAN BARNEVELD, WEST, J. T. GEROULD

The College of Dentistry

FACULTY

- CYRUS NORTHROP, LL.D., President
ALFRED OWRE, D.M.D., M.D., C.M., Dean, Professor of Operatic Dentistry and Dental Metallurgy
RICHARD O. BEARD, M.D., Professor of Physiology
THOMAS G. LEE, B.S., M.D., Professor of Histology and Embryology
GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry
FRANK F. WESBROOK, M.A., M.D., Professor of Pathology and Bacteriology
THOMAS B. HARTZELL, M.D., D.M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery
OSCAR A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia
CHARLES A. ERDMANN, M.D., Professor of Anatomy
F. W. SPRINGER, E.E., Professor of Electrical Engineering
JAMES M. WALLS, D.M.D., Professor of Clinical Operative Dentistry
FOREST H. ORTON, D.D.S., Professor of Crown and Bridge-Work
IRA HARRIS DERBY, B.S., Assistant Professor of Chemistry
R. H. MULLIN, B.A., M.B., Assistant Professor of Pathology and Bacteriology
WINFIELD S. NICKERSON, Sc.D., M.D., Assistant Professor of Histology and Embryology
F. H. SCOTT, Ph.D., M.B., Assistant Professor of Physiology
M. R. WILCOX, M.D., Assistant Professor of Physiology
H. A. BRITZIUS, M.A., M.S., Instructor in Technic
NORMAN J. COX, B.S., D.M.D., Instructor in Operative Dentistry
G. M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy
C. F. DISEN, M.D., Demonstrator of Anatomy
E. FIDLAR, M.B., Junior Demonstrator of Pathology and Bacteriology
H. S. GODFREY, D.M.D., Instructor in Operative Dentistry
R. O. GREEN, D.D.S., Instructor in Operative Dentistry
CHARLES A. GRIFFITH, D.D.S., Instructor in Operative Dentistry
J. A. HANDY, Ph.C., Instructor in Chemistry
EARLE R. HARE, B.S., M.D., Instructor in Anatomy
MARY V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy
U. E. HEDDY, D.D.S., Instructor in Crown and Bridge-Work
R. R. JONES, D.D.S., Instructor in Operative Dentistry
W. F. LASBY, B.S., D.D.S., Instructor in Prosthetic Dentistry

H. C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy
J. F. LEMSTROM, M.D., Instructor in Histology and Embryology
HERMAN A. MAVES, D.D.S., Instructor in Operative Dentistry
OSCAR OWRE, M.D., Instructor in Oral Surgery
JAY N. PIKE, D.D.S., Instructor in Orthodontia
H. M. REID, D.D.S., Instructor in Prosthetic Dentistry
H. E. ROBERTSON, A.B., M.D., Demonstrator in Pathology
J. F. SCHEFCIK, B.S., Ph.G., M.D., C.M., Instructor in Materia Medica
J. P. SEDGWICK, B.S., M.D., Instructor in Physiological Chemistry
C. C. TYRELL, B.A., M.D., Prosector of Anatomy
ANDREW J. WEISS, Instructor in Technics
AMOS S. WELLS, B.A., D.D.S., Instructor in Crown and Bridge-Work
F. N. WILSON, Assistant in Anatomy
FRANK R. WRIGHT, D.D.S., M.D., Instructor in Anaesthesia and Oral Surgery

MRS. M. C. CLYDE, Professional Nurse
MISS H. E. COOKE, Professional Nurse
A. L. MOORE, Infirmary Clerk

General Information, Rules and Regulations

The regular course covers a period of three years of collegiate study, each year representing nine months in actual attendance.

The University now offers an optional six year course of study. The first three years of the course are given in the College of Science, Literature and the Arts. The last three years are given in the College of Dentistry. It leads to the bachelor's degree at end of the first four years and to the degree of doctor of dental surgery at the end of the six year course.

For schedule of lectures, announcements, changes in college rules, etc., see bulletin board.

Rules and regulations of the infirmary and laboratories are posted in their respective places.

REQUIREMENTS FOR ADMISSION

Graduates of the following courses, provided their credits satisfy the requirements as indicated in the following list of subjects: are admitted to the College of Dentistry without conditions:

- (a) Any four-year course of a Minnesota State high school
- (b) A four-year course of other accredited schools in the state
- (c) A four-year course of schools in any other state accredited to the state university of that state
- (d) The advanced Latin or English course of the Minnesota State normal schools.

The term CREDIT means not less than five recitations of forty minutes each per week for a period of thirty-six weeks. In manual subjects and kindred courses a credit means the equivalent of ten recitation periods per week for thirty-six weeks.

Required of All

English	.	.	.	.	.	.	.	four credits
Elementary Algebra	.	.	.	.	.	.	.	one credit
Plane Geometry	.	.	.	.	.	.	.	one credit
Latin	.	.	.	.	.	.	.	one credit
Manual Training	.	.	.	.	.	.	.	one credit

Electives

(Seven credits must be selected from the following list)

MATHEMATICS

Higher algebra, one half credit

Solid geometry, one half credit

LATIN

Caesar, four books, one credit

Cicero, six orations, one credit

Virgil, six books, one credit

GREEK

Grammar, one credit

Anabasis, four books, one credit

GERMAN

Grammar, one credit

Literature, one credit

FRENCH

Grammar, one credit

Literature, one credit

SPANISH

Grammar, one credit

Literature, one credit

NORWEGIAN-SWEDISH

Grammar, one credit

Literature, one credit

HISTORY

Ancient to Charlemagne, one credit

Modern, from Charlemagne, one credit

English, one half credit

Senior American, one half credit

AMERICAN GOVERNMENT, one half credit

BUSINESS SUBJECTS, accepted only as parts of a well defined course

History of commerce, one half credit

Commercial geography, one half or one credit

Elementary economics, one half credit

Business law, one half credit

Business arithmetic, one half credit

Elementary bookkeeping, one half credit

Advanced bookkeeping and business practice, one credit

Stenography and typewriting, two credits

Business spelling and correspondence, one half credit

PHYSICS, one credit

CHEMISTRY, one credit

BOTANY, one half or one credit

ZOOLOGY, one half or one credit

ASTRONOMY, one half credit

GEOLOGY, one half credit

PHYSIOGRAPHY, one half credit

MANUAL SUBJECTS, accepted only as parts of a well defined course

Freehand drawing, two credits

Mechanical drawing, two credits

Shop work, two credits

Modeling and wood carving, one credit

Domestic art and science, two credits

Students having no credit in manual training will be required to demonstrate, by test, the possession of mechanical ability.

Certificates of graduation must be presented on the regular University admission blanks, which may be obtained from the registrar.

Students not having credentials as indicated in either (a), (b), (c), or (d). are required to take the regular entrance examinations. See program page 3.

State High School Board certificates are accepted in lieu of examinations in the subjects they represent.

MATRICULATION AND REGISTRATION

After matriculating with the registrar of the University and paying the regular fees, students will be assigned seats, benches and lockers in the order of their registration with the dean of the college.

Students shall have their registration completed not later than the day previous to the day set for regular work to begin.

No one is recognized as a student of the school or admitted to classes, until his receipts are presented to and countersigned by the dean; this applies to both semesters.

DESCRIPTION OF SUBJECTS ACCEPTED FOR ADMISSION

The following statements indicate in a general way the preparation which the University expects in the various subjects accepted for admission.

ENGLISH (four years)

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four-year course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are:

- (a) English classics
- (b) The principles of rhetoric
- (c) Practice in written expression

(a) English classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study: Shakespeare's *MACBETH*; Milton's *PARADISE LOST*, books one and two; Burke's *CONCILIATION WITH AMERICA*; Carlyle's essay on *BURNS*. In the study of these works the student should know the leading facts connected with the author and his time; he should become familiar with the subject matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.

A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected; at least two of Shakespeare's plays, besides the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.

- (b) The work in the principles of composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching a student the correct use of English.
- (c) Not less than one hour each week throughout the four years of the high school course should be devoted to practice in written expression. The instructor may choose such topics as local conditions may require or make most profitable; but whatever line of work is pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

ELEMENTARY ALGEBRA (one year). Addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, simple equations, with one, two, and several unknown quantities followed by problems, theory of exponents, involution (including the binomial theorem for positive integral exponents), evolution, radicals, inequalities, ratio, proportion, progression, and quadratic equations, with problems.

HIGHER ALGEBRA, FIRST PART (one half year). While this subject does not include any topics not named under elementary algebra, a much fuller treatment of those topics is expected in this work. Principles as well as processes should be learned, theorems and rules should be rigorously demonstrated, the exercises and problems should be more difficult, and students should be drilled in short methods and rapid work. Unless candidates have a good knowledge of the fundamental topics named below, they are not prepared to pursue successfully at the University the second part of higher algebra.

The topics are addition, subtraction, multiplication, division, factoring, highest common divisor, lowest common multiple, fractions, theory of exponents, involution, evolution, surds, imaginaries and simple equations with problems.

PLANE GEOMETRY (one year). Any of the standard texts on this subject will furnish the necessary preparation. Isoperimetry, symmetry and maxima and minima of figures are not required. The exercises requiring solutions and demonstrations should not be omitted.

SOLID GEOMETRY (one half year). Any of the standard texts on this subject will furnish the necessary preparation. The exercises requiring solutions and demonstrations should not be omitted.

LATIN GRAMMAR (one year). This will include the subjects of orthography, etymology and syntax. Proficiency is particularly desired in the following subjects: the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

CAESAR (one year). First four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. Special attention should be paid to the translation of passages of the text into correct and idiomatic English; grammatical questions connected with the text; more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The student is expected to be familiar with the life of Caesar and an account of his wars.

CICERO (one year). Any six orations from the following list: AGAINST CATILINE, POET ARCHIAS, LIGARIUS, MARCELLUS, MANILIAN LAW (to count as two orations), the fourteenth PHILLIPIC. The student should also be familiar with the life of Cicero.

VIRGIL (one year). Six books of the AENEID, or five of the AENEID and one of the METAMORPHOSES of Ovid, or the ECLOGUES. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rythmical reading of the text is to be encouraged.

GREEK GRAMMAR (one year)

XENOPHON'S ANABASIS (one year)—Four books

GERMAN (two years)

First year the pupil should acquire:

- (1) A correct pronunciation, training of the ear, eye and organs of speech.
- (2) A vocabulary of a thousand words of every day use; facility in combining these words into simple sentences. As a means to this, 100 to 150 pages of easy narrative prose and poetry should be read, from which questions and answers may be formed. To test the student's memory and knowledge of the word-order he should relate or write out the story anew in his own words.
- (3) From two to three hundred German idioms.
- (4) The essentials of German grammar, to be taught by means of oral and written exercises based upon the reading lessons.

Second year:

- (1) Read one hundred and fifty to two hundred pages of prose and poetry.
- (2) Practice in reading smoothly and with expression.
- (3) Carefully translate selected passages of the text into idiomatic English. To translate easy sentences which the student already understands is a waste of time.
- (4) Translate sentences from English to German, using words and idioms of the text read.
- (5) Study topically German grammar; chief rules of orthography, etymology and syntax; illustrate these by words, phrases and sentences selected or composed by the student.

FRENCH (two years). The principles of French grammar, including acquaintance with the verb, regular and irregular; an ability to translate easy English sentences into French and simple French prose into English.

SPANISH (two years). First year, grammar and reader; second year, grammar reviewed; reading of some modern writer; composition and conversation.

NORWEGIAN (two years). First year, grammar and reader; one of Bjornson's stories. Second year, grammar reviewed; Raabe's History of Norway and a modern story or some easy play; composition and conversation.

SWEDISH (two years). First year, the essentials of Swedish grammar; reading of easy prose and verse. Second year, grammar reviewed and composition; works of Tegner and Runeberg; elementary history of literature.

ANCIENT HISTORY (one year).

- (a) This study should begin with from five to seven weeks upon the oriental peoples who have most influenced European development, noting the early civilizations in the valleys of the Nile and Euphrates, the spreading and meeting of these civilizations in the intermediate region, with notice of the more important states in that district, and the union of the East under Persia. This survey should aim to give an idea of the reach of recorded history, of the distinguishing features of the successive oriental nations, and of their more important influence upon later European development.
- (b) In the Greek and Roman age emphasis should be put on the evolution of institutions, and considerable attention should be paid to the later Hellenistic period, after the rise of Macedon, and to the Roman Empire, with its bearing upon subsequent history. Some of the work should be illustrated by the use of sources, and maps should be used constantly.
- (c) The subject should be carried down to the establishment of Charlemagne's empire. This will bring together all the chief lines of influence which were afterwards to make our modern world, will show the meaning of the preceding eras as can not be done if the study stops at an early date, and will leave the subject at a period of comparative order and simplicity.

MODERN HISTORY (one year). From Charlemagne to the present. The topics to which special attention are called are the period of disorder after Charlemagne and the consequent rise of feudalism, the Holy Roman Empire and the papacy, the medieval church, the crusades, the free cities, the rise of national monarchies, the intellectual renaissance and the protestant reformation, the French revolution and the subsequent democratic movements in politics and industry.

It is desirable to give at least half of the year to this last period from 1789.

ENGLISH HISTORY (one half year). The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents, like Magna Charta, should receive careful study.

SENIOR AMERICAN HISTORY (one half year). No attempt should be made to cover the whole field in this time. Either the colonial history or the period from 1783 to 1832 offers quite enough material. In any case, considerable use should be made of collections of documents, and sources.

AMERICAN GOVERNMENT (one half year). This should be study of our government, national, state and local, as it is organized and actually operated today. Students should be made familiar with the purpose and salient features of important instruments of government and other public acts like the Declaration of Independence, Articles of Confederation, the constitution of the United States, the constitution of Minnesota, and a local city or village charter.

In no case, however, should the instruction consist wholly or largely of an analysis of documents. It should rather aim to impart information essential to intelligent, active citizenship, such as as the division of the government into departments, their organization and function; the methods of nominating, electing, and appointing men to office; of framing and amending constitutions, city charters and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law, and constitutional law, between equity, civil, and criminal cases.

To make the government seem a real working organization to the student, he should be encouraged to observe public proceedings by attending school meetings, town meetings, sessions of the county commissioners, city council, state legislature, a trial in court, and party primaries and conventions. He should also be led to read about and observe public affairs for himself. To that end let him collect statistics and accounts of work done by particular offices and departments from published reports and by personal inquiry.

BUSINESS SUBJECTS: The following syllabi are offered by the University in order that the schools may be informed concerning the preparation expected in business subjects, in view of the fact that graduates of business courses are now admitted to certain departments of the University on the same footing as the graduates of other courses.

It is not intended or expected that many schools, or perhaps any one school, will offer all the subjects indicated. Not to exceed forty per cent of the units for admission should in any case be taken from the list of technical business subjects named below. The other sixty per cent should embrace the required English and mathematics, together with some work in history, science, and the modern languages. The University is strongly of the opinion that no business course should be offered which does not include at least two years of some one modern language.

Under the head of business subjects are included two distinct lines of work: First, courses dealing with the history, description, theory and law of business, including the history of commerce, commercial geography, elementary economics and business law. Second, courses dealing with the technique of business. The latter may be further subdivided into the mathematics of business, includ-

ing business arithmetic, bookkeeping and business practice; and the language of business, including stenography, typewriting and business correspondence.

HISTORY OF COMMERCE (one half or one year). The history of commerce forms the natural introduction to the study of present economic conditions. It would be well to give special attention to the economic history of England and the United States. The work should be based on a text book, supplemented by carefully directed map work and assigned readings. This should be preceded by a year course of medieval and modern European history.

COMMERCIAL GEOGRAPHY (one half or one year). As the history of commerce is concerned with the past, so commercial geography describes and seeks to explain the commerce of today. The work should cover the ways in which commerce depends on nature and on man, the development of means of transportation and communication, and a detailed study of the several commercial nations of the world with reference to resources, industries, transportation facilities and commerce. It should be based on a text book supplemented by map work and assigned readings.

ELEMENTARY ECONOMICS (one half year). In the study of economics it is desirable to avoid two extremes, abstract theory on the one hand, and controversial questions such as the tariff, trusts and trade unions on the other hand. Emphasis should be placed on the historical and descriptive matter, especially relating to the economic development of England and the United States. Some good elementary text book should be mastered and a reasonable amount of collateral reading required.

BUSINESS LAW (one half year). The object of this study is not to make "every man his own lawyer" but rather to enable him to keep out of legal complications. Text book supplemented by study of a few typical cases, and practice in drawing up ordinary legal papers such as bills, notes, checks, etc.

BUSINESS ARITHMETIC (one half year). The object is first of all, absolute accuracy and secondly speed in ordinary business computations. The topics to be emphasized are, fundamental operations, common fractions having as a denominator 2, 3, 4, 6, and 8, a few common weights and measures, percentage and its applications, and useful short methods, especially the use of interest and other calculation tables. The work should be based on a text book, supplemented by numerous live exercises from current sources.

ELEMENTARY BOOKKEEPING (one year). A text book should be employed with exercises so arranged that no two pupils will do exactly the same work, and no credit should be allowed unless the work is done neatly, accurately and at a satisfactory rate of speed. It is suggested that double periods be provided, and all work be done in class under the eye of the instructor. The set used should include the journal, cash book, sales book, ledger, check book, bank pass book and trial balance book.

ADVANCED BOOKKEEPING AND BUSINESS PRACTICE (one year). Thorough drill on standard business forms, such as bills, receipts, checks, notes, etc., also on the use and meaning of business symbols and abbreviations. The student should become acquainted with the bill book and the invoice book, and loose leaf and voucher system of bookkeeping. Each student should carry on a business of his own, first as an individual, then as a partnership, and finally as a corporation. Credit on this course should mean that the student lacks only age and actual business experience to become a competent bookkeeper.

STENOGRAPHY AND TYPEWRITING (two years). This work is expected to occupy not less than two periods daily for two years. No credit should be given for either shorthand or typewriting if taken alone. Nothing but the touch method should

be used in typewriting. The essentials are first, accuracy and speed in taking dictation and transcribing notes; secondly, correct spelling, capitalization, punctuation and paragraphing. The minimum speed at the end of the first year should be 75 words per minute in dictation and 25 words per minute on the machine; and at the end of the second year, 100 words per minute in dictation and 35 words per minute in transcribing notes. Thorough training should also be given in care of the machine, in modern methods of manifolding and in filing papers.

SPELLING AND BUSINESS CORRESPONDENCE (one half year). Preliminary review of five hundred common technical business words. Thorough training on business correspondence including (1) the proper form of business letters, (2) the proper choice of words and construction of sentences with reference to clearness and brevity, (3) capitalization, punctuation and paragraphing, (4) writing and answering telegrams and advertisements. The work should be based on a text book supplemented by letters relating to most prominent industries of the locality.

PHYSICS (one year). It is suggested that the year's work be confined to four of the seven subjects mentioned below.

(1) Mechanics of solids, (2) liquids and gases, (3) sound, (4) heat, (5) light, (6) and (7) electricity and magnetism (to count as two subjects, but not to be divided).

CHEMISTRY (one year). The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

BOTANY (one or one half year). Schools which give one half year of botany should devote particular attention to plant relations, making the course largely ecologic in bearing. When a whole year is given to the subject, additional work upon plant structures should be offered, and together with fundamental conceptions of ecology, a general idea of morphology and taxonomy should be the aim of the course.

ZOOLOGY (one or one half year). The course of zoology, whether a half year or a year course, should be a natural history rather than a modern morphological course. Collecting and classifying (as a means) should be encouraged as much as possible. Animals should be studied as living units, in their relation to one another and their environment. The general and special structural feature in relation to the habits, the food and manner of obtaining it, the enemies and means of protection against them, hibernation, migration, the difference in habits, form and structure between the old or mature animal and the young, the relation of parents to their offspring, etc.—in short, all about the life of the animal under consideration should be made out by direct observation of the animal in its natural home and in confinement.

The course, on the whole, should aim to foster and develop a love for nature, train the power of observation toward accuracy and give a healthful stimulation to the imagination. The pupil should be guarded against the habit of confounding the facts of observation with his interpretation and his judgments.

The animals for direct observation should be selected from as many branches of the animal kingdom as possible, and the changes during the year in the character of the fauna of the locality in general as well as of some particular region should be noted. In some localities the work will of necessity be largely restricted to land and air animals, but no locality in Minnesota is so poor in animal life that very profitable work cannot be turned out along the line indicated above.

It will be noticed that such a course of necessity includes so-called **laboratory work**. The amount and extent of laboratory work will depend upon conditions,

but even under the best conditions it is hardly advisable to go into detailed dissections and embryology. Continued, repeated, and close observation, aided now and then, by a simple hand lens or a compound microscope, will reveal an abundance of material and opportunity for disciplining the mind.

ASTRONOMY (one half year). An elementary course in general astronomy as presented in any good modern text book.

GEOLOGY (one half year). These subdivisions should receive special attention; physiographic geology, which treats of the building of the land and the evolution of its existing contours; geo-dynamics, the study of the forces, atmosphere, water, terrestrial heat, plants and animals modifying the earth; and a brief survey of historical geology.

PHYSIOGRAPHY (one half year). The following topics should be emphasized; meteorology, the leading facts relating to the atmosphere and its phenomena, including some acquaintance with the work of the United States weather bureau; land sculpture, as it treats of the origin, development and decadence of land forms, and the influence of these processes on the physical environment of man.

MANUAL SUBJECTS: In view of the multiplication of manual training courses in the high schools, it seems well to define what the University expects in the line of manual training and drawing work. It is not implied that many schools, or perhaps any one school should offer all the subjects indicated. Not to exceed twenty-five per cent of the units for admission to the University should in any case be taken from the list given below. The major part of the course should consist of the required English, and of mathematics, history, science and foreign languages. Students taking a manual training course should be held to a full course in mathematics, and should be required to complete not less than two years of one foreign language.

Owing to the fact that drawing and shop work do not require outside preparation, it is not fair that they should be credited by the schools on the same basis as the academic subjects. It is therefore suggested that half credits be allowed; that is to say, one full credit for two years of work one period daily, or for one year of work two periods daily, in each subject.

FREEHAND DRAWING (two credits)

MECHANICAL DRAWING (two credits)

JOINERY (one half credit)

WOOD TURNING AND CABINET MAKING (one half credit)

PATTERN MAKING AND FORGE SHOP (one half credit)

MACHINE SHOP INCLUDING CHIPPING

FILEING AND WORK ON THE IRON LATHE (one half credit)

DRILL PRESS AND IRON PLANER

CLAY MODELING (one half credit)

WOOD CARVING (one half credit)

DOMESTIC ART, INCLUDING CAREFULLY GRADED EXERCISES IN SEWING (one credit)

DOMESTIC SCIENCE, INCLUDING PRACTICAL COOKERY, AND HOUSEHOLD ECONOMY (one credit)

ADVANCED STANDING

Applicants for advanced standing must present satisfactory evidence of possessing the preliminary educational qualifications required of the class they desire to enter.

They must also satisfy the professors of the branches from which they wish to be exempt, that the work pursued by them in other institutions

was equal in scope and amount to that passed by the class they propose to enter.

No credits are accepted unconditionally, the faculty reserving the privilege of examining any applicant when deemed necessary.

All certificates pertaining to advanced standing must be presented to the dean who will send them to the respective professors for acceptance or report of further requirements for acceptance.

Students coming from other schools must make up their technic conditions under supervision of the instructors of this school, at the convenience of the instructor.

One-year credit will be allowed graduates in medicine, but the dental technic branches of the first year must be taken and completed before advanced work in these branches can be entered upon.

EXAMINATIONS, STANDINGS AND CONDITIONS

No student with an entrance condition will be allowed to register for any second-year subject, nor will any student with any first-year condition or failure be allowed to register for a third-year subject.

No student will be allowed to omit any freshman work in order to make up entrance conditions, except by special permission of the department affected.

Students will not be permitted to substitute private work in any branch for the regular college courses.

Final examination in every required subject is held at the close of the work at the end of the semester or quarter, according to the extent of the course given. Opportunity is offered to remove conditions at the opening of the school year in September. The examinations at the end of semester or quarter are only for those who are taking the courses, while the September examinations are only for those who are attempting to remove conditions or are applicants for advanced standing.

The final standing of any student in a given subject shall be determined as the result of his (a) practical work (laboratory or clinical), (b) recitations, and (c) oral or (d) written examinations.

All of these factors shall be taken into consideration in making up the final grading in any subject.

Students' standings shall be determined at the end of the year by a conference of the heads of the departments in which the work is pursued during that year.

All standings shall be reported officially to and from the registrar's office at the end of the year.

Students shall be reported as Passed, Incomplete, Conditioned or Failed.

No student will be registered for any examination to remove a condition until he presents a receipt from the cashier for the fee of said examination.

Conditions must be removed at the begining of the school year in September. No student who has any conditions unremoved at the close of this examination is allowed to continue with his class without the express permission of the dean upon the recommendation of the department concerned.

A condition not removed at the first opportunity becomes a failure subject to the rule governing failures.

Failures necessitate the taking of the work again in class.

A student repeating work (by reason of having "failed") must pay the fees connected with that course.

A student who is conditioned in the majority of the subjects given in any year will become a "failed" student and must repeat the entire work of that year.

Students who carry "failures" into a succeeding year may find a resultant conflict of study hours; in that event they will give preference to the unfinished studies of the lower conflicting course.

Practical work in the infirmary is not allowed to students having conditions, or incompleteness in any technic work.

ATTENDANCE AND DISCIPLINE

Attendance upon all lectures, and infirmary and laboratory hours, as scheduled, is obligatory. A complete record of each student's attendance is kept, and all absences and tardinesses are noted.

Students to be eligible for final examinations, must have a record of not less than eighty per cent in attendance.

Habitual absence, continued indifference to study, or persistently poor scholarship, may subject the student to temporary or permanent suspension.

All laboratory courses must be taken in full and must invariably be entered upon during the first week in which they begin.

The connection of any student with this college may be terminated at any time, without a return of fees, whenever such action may be advisable on the ground of immorality or disorderly conduct, or a failure to conform to any of the established rules.

Students detected in the use of outside help, as notes, etc., in quizzes or examinations, or of rendering assistance to other students during examinations, will be suspended or expelled. The possession of any secret aids while under examination, will be deemed presumptive evidence of guilt, and will subject the student to the same penalty as if detected in using them.

Any student detected in stealing will be permanently expelled from the college.

The practice of dentistry by students, except under the direct supervision of a preceptor, is prohibited by law in the state of Minnesota. Any student detected in violating this law will be suspended or expelled.

DEGREES

The degree of doctor of dental surgery is conferred by the Board of Regents upon the students who are recommended, by vote of the faculty, for graduation. Candidates for the degree must possess the following essential qualifications:

- (1) Twenty-one years of age.
- (2) Good moral character.
- (3) Three full college years spent in the study of dentistry; the third year, at least, in this University, and the remainder in this or other recognized schools of dentistry.
- (4) Satisfactory examinations passed in all branches of the curriculum.

FEES

The annual fee is one hundred and fifty dollars (\$150.00). It includes all charges for matriculation, lectures, laboratory courses, dissections, technic materials, microscopes and graduation.

One-half of this fee will be payable when the student matriculates. The accountant's receipts for the portion will entitle the holder to take entrance examinations and to classify. The second half will be payable at the opening of the second semester. These receipts must be presented to and countersigned by the dean before entering upon the work of each semester.

A deposit of five dollars (\$5.00) will be required in addition to the first semester fee, to cover loss of and breakage or damage to college property. This will be returned at the end of the year, providing there is no charge against the student. This fee is to be deposited with the University accountant each year when the student matriculates.

If the applicant fails to pass the entrance examinations, his fee will be returned by the accountant.

After having entered upon the course of study, fees are not returnable, and no rebate will be recommended should a student discontinue work, but the faculty may recommend the application of a part to the succeeding year.

The fee for condition examinations is one dollar (\$1.00)

The fee for advanced standing examinations is one dollar (\$1.00)

The fee for special examinations is five dollars (\$5.00)

Special and graduate students will pay to the accountant a fee of thirty dollars per year for each study they pursue, and additional fees, varying from ten to thirty dollars, for each laboratory course they may select.

INSTRUMENTS, BOOKS, TOOLS AND MATERIALS

All students are required to provide themselves with instruments, books, tools and materials as prescribed by the college.

BREAKAGE AND LOSS

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt.

For apparatus and material attaching to his laboratory desk he will also be held responsible. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

SUMMARY EXPENSES

	1st yr.	2d yr.	3d yr.
Tuition, Instruments, Tools and Books. . .	\$200 00	\$350 00	\$175 00

SPECIAL LECTURES

Occasional lectures are given during the senior year on subjects having a general bearing upon the practice of dentistry, such as: Ethics Jurisprudence, Public educational measures, etc.

ALUMNI ASSOCIATION

An association of the graduates of the college has its annual meeting during commencement week.

President, E. F. Wanous, Syndicate Block, Minneapolis.

Secretary, B. A. Sandy, Andrus Building, Minneapolis.

The Department of Medicine

The Department of Medicine includes the following colleges:

The College of Medicine and Surgery

FRANK F. WESBROOK, M.A., M.D., C.M., Dean

THOMAS G. LEE, B.S., M.D., C.M., Librarian Department of Medicine

The College of Homeopathic Medicine and Surgery

EUGENE L. MANN, B.S., M.D., Dean

The College of Dentistry

ALFRED OWRE, D.M.D., MD., Dean

The College of Pharmacy

FREDERICK J. WULLING, Phm.D., LL.M., Dean

Each college is self-governed as to its internal affairs, having its own faculty and an independent curriculum. The laboratories and staff of the College of Medicine and Surgery provide instruction for all students in each of the four colleges as required in the following branches:

Gross and microscopic anatomy and embryology, physiology, chemistry, physiological chemistry, pathology and bacteriology, pharmacology, principles of surgery and clinical microscopy.

BUILDINGS AND EQUIPMENT

The department occupies six buildings, five of which are situated upon the University campus, viz.: Millard Hall, the medical science building, the laboratory of chemistry, the laboratory of anatomy and the institute of Public Health and Pathology. In addition, two more buildings, a University hospital and a building for operative surgery, are provided for and will be erected.

Millard Hall contains the offices of the deans of the college of homeopathic medicine and surgery and of the college of dentistry; a large amphitheatre and lecture rooms for the several colleges, the library and reading room of the department, the laboratory of materia medica, the operating rooms and laboratories of dentistry and the dental infirmary.

LIBRARY OF MEDICAL DEPARTMENT

Thomas G. Lee, B.S., M.D., Librarian

The Medical Library consists of the following collections: The general clinical library, the libraries of the College of Dentistry and Pharmacy, the department libraries of pathology and bacteriology, histology and embryology, anatomy, and physiology. These contain nearly 10,000 bound volumes, 14,000 unbound volumes, monographs, reprints, dissertations, etc., and about 175 current periodicals. In addition to the above,

the Libraries of the State Board of Health, of Hennepin County Medical Society, containing 4,000 volumes and 50 journals, and of the Ramsey County Medical Society with some 5,000 volumes and 150 journals, give the student additional opportunity to consult all the more important medical publications.

Course in Dentistry

FRESHMAN YEAR

FIRST SEMESTER

ANATOMY 1, 2, 3 and 4, twelve hours, Professor Erdmann and Assistants
CHEMISTRY 1 and 3, sixteen hours, Professor Frankforter and Assistants
COMPARATIVE DENTAL ANATOMY 1, two hours, Dr. Hartzell
DENTAL ANATOMY 1, three hours, Drs. Damon and Lawton
PROSTHETIC DENTISTRY 1, fourteen hours, Drs. Damon and Lawton

SECOND SEMESTER

ANATOMY 5, twelve hours, Professor Erdmann and Assistants
DENTAL ANATOMY 2, three hours, Drs. Damon and Lawton
HISTOLOGY AND EMBRYOLOGY 5, eight hours, Professor Lee and Assistants
PHYSIOLOGY 1, six hours, Professor Beard and Assistants
PROSTHETIC DENTISTRY 2, eight hours, Drs. Damon and Lawton

JUNIOR YEAR

FIRST SEMESTER

CROWN AND BRIDGE-WORK 1, eight hours, Professor Orton and Assistants
MATERIA MEDICA 1, two hours, Dr. Schefcik
OPERATIVE DENTISTRY 1, fifteen hours, Professors Owre, Walls and Assistants
ORTHODONTIA 1, six hours, Professor Weiss and Assistants
PATHOLOGY AND THERAPEUTICS 1, two hours, Professor Hartzell and Assistants
PROSTHETIC DENTISTRY 3, eleven hours, Professor Weiss and Assistants

SECOND SEMESTER

CROWN AND BRIDGE-WORK 2, eight hours, Professor Orton and Assistants
DENTAL METALLURGY 1, two hours, Professor Owre
MATERIA MEDICA 2, two hours, Dr. Schefcik
OPERATIVE DENTISTRY 2, fifteen hours, Professors Owre, Walls and Assistants
ORTHODONTIA 2, four hours, Professor Weiss and Assistants
PATHOLOGY AND BACTERIOLOGY 1, two hours, Professor Westbrook and Assistants
PATHOLOGY AND THERAPEUTICS 2, two hours, Professor Hartzell and Assistants
PROSTHETIC DENTISTRY 4, eleven hours, Professor Weiss and Assistants

SENIOR YEAR

FIRST SEMESTER

CROWN AND BRIDGE-WORK 3, six hours, Professor Orton and Assistants
DENTAL ELECTRICITY 3, one hour, Professor Springer
OPERATIVE DENTISTRY 3, twenty hours, Professors Owre, Walls and Assistants
ORAL SURGERY 1, three hours, Professor Hartzell and Assistants
ORTHODONTIA 3, five hours, Professor Weiss and Assistants
PHYSICAL DIAGNOSIS AND ANOESTHESIA 1, one hour, Drs. Wright and Owre
PROSTHETIC DENTISTRY 5, eight hours, Professor Weiss and Assistants

SECOND SEMESTER

CROWN AND BRIDGE-WORK 4, six hours, Professor Orton and Assistants
DENTAL METALLURGY 1, two hours, Professor Owre
OPERATIVE DENTISTRY 4, twenty hours, Professors Owre, Walls and Assistants
ORAL SURGERY 2, three hours, Professor Hartzell and Assistants
ORTHODONTIA 4, five hours, Professor Weiss and Assistants
PHYSICAL DIAGNOSIS AND ANOESTHESIA 2, one hour, Drs. Wright and Owre
PROSTHETIC DENTISTRY 4, eight hours, Professor Weiss and Assistants

Courses of Instruction

ANATOMY

CHARLES A. ERDMANN, M.D., Professor of Anatomy

EARLE R. HARE, B.S., M.D., Instructor in Anatomy

C. F. DISEN, M.D., Demonstrator of Anatomy

C. C. TYRRELL, Ph.B., M.D., Prosecutor in Anatomy

F. N. WILSON, Assistant in Anatomy

1. **OSTEOLOGY** PROFESSORS ERDMANN, DRs. HARE AND TYRRELL
Four credits (twelve hours of each week, for six weeks)
Required of freshmen.
Lectures and recitations upon the human skeleton and supplementary work on the osteology of domestic mammals. Practical study of the bones of the human body, and recitations from the specimen.
First quarter
2. **SYNDESMOLGY** PROFESSOR ERDMANN, DRs. HARE AND TYRRELL
Two credits (twelve hours of each week, for three weeks)
Open to students having completed course 1. Required of freshmen.
Lectures and recitations covering the articulations, including the structure and movements of joints. Demonstrations from the specimen and preparation.
First quarter
3. **SPLANCHNOLOGY** PROFESSORS ERDMANN, DRs. HARE AND TYRRELL
Three credits (twelve hours of each week, for four and one-half weeks)
Open to students having completed course 2
Lectures and recitations on the thoracic and abdominal viscera, supplemented by the study of dissected specimens and models.
Second quarter
4. **NEUROLOGY** PROFESSOR ERDMANN, DRs. HARE AND TYRRELL
Three credits (twelve hours of each week for four and one-half weeks)
Open to students having completed course 3
Lectures and recitations on the cerebro-special and sympathetic nervous system.
Second quarter
5. **DISSECTION** DRs. DISEN, HARE AND TYRRELL
Six credits (twenty-four laboratory hours each week, for nine weeks)
Open to students having completed course 4. Required of freshmen.
Dissection of a complete lateral half of the human body, with special reference to the head and neck. Dissection of the human and comparative brain.
Fourth quarter

CHEMISTRY

G. B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry

I. H. DERBY, B.S., Assistant Professor of Chemistry

J. A. HANDY, Ph.C., Instructor in Chemistry

- | | | |
|----|---|---|
| 1. | GENERAL CHEMISTRY | ASSISTANT PROFESSOR DERBY AND MR. HANDY |
| | Five credits (four recitation hours and twelve laboratory hours for nine weeks) | First quarter |
| | Required of freshmen. | |

3. CROWN AND BRIDGE-WORK PROFESSOR ORTON AND ASSISTANTS
 Three credits (six laboratory hours per week) First semester
 Open to students completing 1 and 2. Required of seniors.
 Clinical lectures dealing with questions arising in the infirmary and
 clinical practice covering the entire field of crown and bridge-work.
4. CROWN AND BRIDGE-WORK
 Continuation of 3 as outlined

DENTAL ANATOMY

G. M. DAMON, D.D.S., Instructor in Prosehetic Dentistry and Dental Anatomy

H. C. Lawton, D.D.S., Instructor in Prosthetic Dentistry and Dental

Anatomy

1. DENTAL ANATOMY DR. DAMON, DR. LAWTON
 Two credits (one recitation and two laboratory hours per week) First semester
 Required of Freshmen.
 This course will consist of lectures, recitations and such laboratory work
 as drawing dissection, modeling and carving of teeth.
2. DENTAL ANATOMY DR. DAMON, DR. LAWTON
 Two credits (one recitation hour and two laboratory hours per week) Second semester
 Open to students completing course 1. Required of freshmen.
 Continuation of course 1 as outlined above.

DENTAL ELECTRICITY

F. W. SPRINGER, E.E., Professor of Electrical Engineering

3. DENTAL ELECTRICITY PROFESSOR SPRINGER
 One credit (two recitation hours per week for nine weeks) First quarter
 Required of seniors.
 A course of instruction will be given upon the different forms of batteries,
 dynamos and motors in use in dental practice. Their construction,
 use, care and operation. Electricity as used in surgery and for thera-
 peutic purposes, including application of x-rays, will be made clear by
 laboratory demonstrations and practical application.

DENTAL METALLURGY

A. OWRE, D.M.D., M.D., C.M., Professor of Operative Dentistry and Dental Metallurgy

1. DENTAL METALLURGY PROFESSOR OWRE
 Two credits (two recitation hours per week) Second semester
 Required of juniors.
 Lectures, recitations and demonstrations, taking up the most important
 metals with special reference to those used in dentistry.

Lectures and laboratory work. The course includes a detailed study of chemical and physical properties of the non-metals and their more important compounds.

3. **QUALITATIVE CHEMISTRY** ASSISTANT PROFESSOR DERBY AND MR. HANDY
 Five credits (four recitation hours and twelve laboratory hours for nine weeks) Second quarter
 Open to students completing course 1. Required of freshmen.
 Lectures, recitations and laboratory work. The course includes the general functions of the metals and acids with their qualitative separation and identification.
 For work in other special or technical lines of chemistry, numerous courses are offered (see Bulletin of the School of Chemistry in the department of physiology, in the pathology of the large number of lines.
 The analysis of the urine is dealt with under physiological chemistry in the department of physiology, in the pathology of the urinary system in the department of pathology and in the clinical laboratories in connection with the microscopy of the urine.

COMPARATIVE DENTAL ANATOMY

M. V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy.

1. **COMPARATIVE DENTAL ANATOMY** DR. HARTZELL
 Two credits (four recitation hours per week for nine weeks) Second quarter
 Open to students completing anatomy 1 and 2. Required of freshmen.
 The instruction in this subject embraces a comparative study of animal life, giving special attention to number, form and arrangement of teeth, and their adaption to food habits, ranging from the horny teeth of the invertebrates, to the complex tooth-forms of the most highly specialized animals of the present time. The lectures will be illustrated with the stereopticon, casts, models and skulls.

CROWN AND BRIDGE-WORK

F. H. ORTON, D.D.S., Professor of Crown and Bridge-Work
 A. S. WELLS, B.A., D.D.S., Instructor in Crown and Bridge-Work
 U. E. HEDDY, D.D.S., Instructor in Crown and Bridge-Work
 H. A. BRITZIUS, M.A., M.S., Instructor in Crown and Bridge Technic

1. **CROWN AND BRIDGE-WORK** PROFESSOR ORTON AND ASSISTANTS
 Five credits (two recitation and six laboratory hours per week) First semester
 Required of juniors.
 Lectures, recitations, demonstrations and laboratory work. The latter includes all the more important forms of crowns and bridges.
2. **CROWN AND BRIDGE-WORK** PROFESSOR ORTON AND ASSISTANTS
 Five credits (two recitation and six laboratory hours per week) Second semester
 Open to students completing 1. Required of juniors.
 Continuation of course 1, as outlined above.

HISTOLOGY AND EMBRYOLOGY

T. G. LEE, B.S., M.D., Professor of Histology and Embryology
 W. S. NICKERSON, Sc.D., M.D., Assistant Professor of Histology and Embryology
 J. F. LEMSTROM, M.D., Instructor in Histology and Embryology

5. HISTOLOGY AND EMBRYOLOGY PROFESSOR LEE AND ASSISTANTS
 Six credits (eight recitation and eight laboratory hours per week)

Fourth quarter

Required of freshmen.

The course will consist of lectures, laboratory work and demonstrations.

The instruction will include a general consideration of the structure and the properties of protoplasm, the cell, cell division, the formation of the germ layers and the differentiation of tissues and organs. Also a detailed study of the structure of the various tissues, epithelium, connective, bone, muscle, blood and lymph; the vascular and lymphatic system, the respiratory system, the excretory system and the nervous system. Special emphasis will be laid upon the full knowledge of the development and structure of the head, mouth, jaw, teeth and the other portions of the digestive system.

Each student will prepare a number of specimens illustrating the structure of the teeth and jaws. The work is based upon the study of human tissues supplemented by considerable amount of comparative work on other forms for the purpose of a better understanding of the structural conditions in man.

MATERIA MEDICA

J. F. SCHEFCIK, B.S., Ph.G., M.D., C.M., Instructor in Materia Medica

1. MATERIA MEDICA DR. SCHEFCIK
 Two credits (two recitation hours per week) First semester

Required of juniors.

This subject is covered as thoroughly as its importance demands. The writing and correct composition of prescriptions is an important feature. Particular attention is devoted to all therapeutic measures pertaining to dentistry. Practical work consists of the study of crude drugs and preparations, with demonstrations of all the pharmaceutical processes of importance.

2. MATERIA MEDICA DR. SCHEFCIK
 Two credits (two recitation hours per week) Second semester
 Open to students completing 1. Required of juniors.
 Continuation of course 1 as outlined above.

OPERATIVE DENTISTRY

A. OWRE, D.M.D., M.D., C.M., Professor of Operative Dentistry and Dental Metallurgy

J. M. WALLS, D.M.D., Professor of Clinical Operative Dentistry
 H. S. GODFREY, D.M.D., Instructor in Operative Dentistry
 N. J. COX, B.S., D.M.D., Instructor in Operative Dentistry
 H. A. MAVES, D.D.S., Instructor in Operative Dentistry
 R. L. GREEN, D.D.S., Instructor in Operative Dentistry

C. A. GRIFFITH, D.D.S., Instructor in Operative Dentistry

R. R. JONES, D.D.S., Instructor in Operative Dentistry

1. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS AND ASSISTANTS
Eight credits (three recitation and ten laboratory hours per week) First semester
Required of juniors.
Lectures, recitations, demonstrations and laboratory work. The object of the latter is to teach technical procedure as much as possible before clinical practice is begun.
2. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS AND ASSISTANTS
Eight credits (three recitation and ten laboratory hours per week) Second semester
Open to students completing 1. Required of juniors.
Lectures, recitations and clinical practice.
3. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS AND ASSISTANTS
Eleven credits (two recitation and eighteen laboratory hours per week) First semester
Required of seniors.
Lectures, recitations, conference work, demonstrations and clinical practice covering the entire field of operative dentistry.
4. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS AND ASSISTANTS
Eleven credits (two recitation and eighteen laboratory hours per week) Second semester
Open to students completing 3. Required of seniors.
Continuation of course 3 as outlined above.

ORAL SURGERY

T. B. HARTZELL, D.M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery

F. R. WRIGHT, D.D.S., M.D., Instructor in Anæsthesia and Oral Surgery

O. OWRE, M.D., Instructor in Oral Surgery

1. ORAL SURGERY PROFESSOR HARTZELL AND ASSISTANTS
Two credits (one recitation and two laboratory hours per week) First semester
Open to students completing courses 1 and 2, pathology and therapeutics.
Required of seniors.
The subject is taught by lectures, recitations and practical demonstrations upon the abundant clinical material available in the infirmary.
2. ORAL SURGERY PROFESSOR HARTZELL AND ASSISTANTS
Two credits (one recitation and two laboratory hours per week) Second semester
Open to students completing 1. Required of seniors.
Continuation of course 1 as outlined above.

ORTHODONTIA

O. A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia

J. N. PIKE, D.D.S., Instructor in Orthodontia

W. F. LASBY, B.S., D.D.S., Instructor in Prosthetic Dentistry

A. J. WEISS, Instructor in Technics

1. ORTHODONTIA PROFESSOR WEISS AND ASSISTANTS
 Three credits (six laboratory hours per week) First semester
 Required of juniors.
 This course consists entirely of technic work in the laboratory, comprising a brief course in the technique of steel which is followed by a comprehensive course in making regulating appliances, and the preparation of materials for the same.
2. ORTHODONTIA PROFESSOR WEISS AND ASSISTANTS
 Three credits (three laboratory hours per week) Second semester
 Open to students completing 1. Required of juniors.
 Continuation of course 1 as outlined above.
3. ORTHODONTIA PROFESSOR WEISS AND ASSISTANTS
 Three credits (one recitation and four laboratory hours per week)
 Required of seniors. First semester
 This course consists of lectures and recitations in which the theory and practice of orthodontia is fully considered.
 An ample clinic is provided which affords a comprehensive training in the practice of orthodontia. Every student is required to treat at least one case of irregularity of the teeth but may treat two or three cases.
4. ORTHODONTIA PROFESSOR WEISS AND ASSISTANTS
 Three credits (one recitation and four laboratory hours per week) Second semester
 Open to students completing 3. Required of seniors.
 Continuation of course 3 as outlined above.

PATHOLOGY AND BACTERIOLOGY

- F. F. WESBROOK, M.A., M.D., C.M., Professor of Pathology and Bacteriology
- R. H. MULLIN, B.A., M.B., Assistant Professor of Pathology and Bacteriology
- H. E. ROBERTSON, B.A., M.D., Demonstrator in Pathology
- E. FIDLAR, M.B., Junior Demonstrator of Pathology and Bacteriology

1. BACTERIOLOGY AND PATHOLOGY PROFESSOR WESBROOK AND ASSISTANTS
 Two credits (four recitation hours per week for nine weeks) Second semester
 Required of juniors.
 A course of lectures, recitations and demonstrations of the general principles underlying pathology and bacteriology.

PATHOLOGY AND THERAPEUTICS

- T. B. HARTZELL, D.M.D., M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery

1. PATHOLOGY AND THERAPEUTICS PROFESSOR HARTZELL
 One and one-half credits (one recitation and one laboratory hour per week) First semester
 Required of juniors.
 These subjects are taught by lectures and recitations involving general pathology as a foundation for the special pathology of the oral cavity; paying particular attention to the therapeutic requirements of the lesions of the mouth and teeth.

The work in pathology is supplemented by laboratory work under the care of the chair of pathology, department of medicine.

2. **PATHOLOGY AND THERAPEUTICS** PROFESSOR HARTZELL
 One and one-half credits (one recitation and one laboratory hour per week) Second semester
 Open to students completing 1. Required of juniors.
 Continuation of course 1 as outlined above.

PHYSICAL DIAGNOSIS AND ANÆSTHESIA

- T. B. HARTZELL, D.M.D., M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery
 F. R. WRIGHT, D.D.S., M.D., Instructor in Anæsthesia and Oral Surgery
 O. OWRE, M.D., Instructor in Oral Surgery

1. **PHYSICAL DIAGNOSIS AND ANÆSTHESIA** PROFESSOR HARTZELL
DR. WRIGHT AND DR. OWRE
 One-half credit (one laboratory hour per week) First semester
 Required of seniors.
 The subject of physical diagnosis will be taught didactically and practically, and will have direct bearing upon the subject of anæsthesia and will be as complete as its importance demands.
 A course in urinalysis will be given in connection with this course.
 The technics of anæsthetics, both general and local, receive full consideration. All anæsthetics are administered in the clinic, and full instruction concerning their use is given. The members of the senior class are required, under direction, to administer them and extract teeth under these agents.
2. **PHYSICAL DIAGNOSIS AND ANÆSTHESIA** PROFESSOR HARTZELL,
DR. WRIGHT AND DR. OWRE
 One-half credit (one laboratory hour per week) Second semester
 Open to students completing 1. Required of seniors.
 Continuation of course 1 as outlined above.

PHYSIOLOGY

- RICHARD OLDING BEARD, M.D., Professor of Physiology
 F. H. SCOTT, Ph.D., M.B., Assistant Professor of Physiology
 M. R. WILCOX, M.D., Assistant Professor of Physiology
 J. P. SEDGWICK, B.S., M.D., Instructor in Physiological Chemistry

1. **PHYSIOLOGY** PROFESSOR BEARD AND ASSISTANTS
 Six credits (twelve recitation hours per week for nine weeks) Third quarter
 Required of freshmen.
 This subject is taught by recitations and lectures, illustrated by practical demonstrations. These embrace the discussion and, so far as possible, the observation of the physiological ingredients of the animal body; of the physiology of cell life or the fundamental properties of the cell; of the nutritive media, blood lymph and chyle; of the elementary functions of the nervous system; the muscular tissues; the vascular mechanism; the alimentary canal; the organs of secretion, excretion and respiration, and of the function of metabolism.

PROSTHETIC DENTISTRY

O. A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia

H. M. REID, D.D.S., Instructor in Prosthetic Dentistry

G. M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

W. F. LASBY, B.S., D.D.S., Instructor in Prosthetic Dentistry

A. J. WEISS, Instructor in Technics

1. **PROSTHETIC TECHNICS** DRS. DAMON AND LAWTON
 Seven credits (fourteen laboratory hours per week) First semester
 Required of freshmen.
 This course consists entirely of technic work in the laboratory, comprising impression materials and their uses and the simpler processes of plate-work.
2. **PROSTHETIC TECHNICS** DRS. DAMON AND LAWTON
 Four credits (eight laboratory hours per week) Second semester
 Open to students completing 1. Required of freshmen.
 Continuation of course 1 as outlined above.
3. **PROSTHETIC DENTISTRY** PROFESSOR WEISS AND ASSISTANTS
 Six credits (one recitation and ten laboratory hours per week) First semester
 Open to students completing 1 and 2. Required of juniors.
 This course consists of lectures and recitations in which the principles and practice of plate-work are fully considered.
 The technic work in this course is a continuation of that begun in the freshmen year, and consists of the more difficult plate-work. This work is graded and consists only of practical processes; obsolete processes and unnecessary repetition are avoided.
4. **PROSTHETIC DENTISTRY** PROFESSOR WEISS AND ASSISTANTS
 Six credits (one recitation and ten laboratory hours per week) Second semester
 Open to students completing 3. Required of juniors.
 Continuation of course 3 as outlined above.
5. **PROSTHETIC DENTISTRY** PROFESSOR WEISS AND ASSISTANTS
 Four credits (eight laboratory hours per week) First semester
 Open to students completing 4. Required of seniors.
 Lectures and recitations cover the treatment of cleft palate cases and other special forms of prosthesis.
 An excellent clinic for general prosthetic dentistry affords ample opportunity for the student to treat a variety of cases by various methods of practice.
6. **PROSTHETIC DENTISTRY** PROFESSOR WEISS AND ASSISTANTS
 Four credits (eight laboratory hours per week) Second semester
 Open to students completing 5. Required of seniors.
 Continuation of course 5 as outlined above.

Students

Graduates 1908—43

Bandelin, William John; Arlington
Bergh, Charles John; St. Paul
Broderon Clarence, Fountain City, Wis.
Bunce, Elmer Wayland; Minneapolis
Coleman, Louren M.; Ellendale, N. D.
Conway, Jesse Francis; Lake City
Conway, Steven Vincent; Minneapolis
Countryman, Ralph Williams;

Minneapolis

Franta, Valentine Adolph; Montgomery
Grafsland, Edwin; Lake Park
Hagberg, Gust Adolph; Brainard
Harmon, Harry Weston; Faribault
Harrison, Francis Randall; St. Cloud
Higgins, Clifford Crumbaugh;

Kirkwood, Ohio

Hull, Isaac Stephenson, St. Paul
James, Meredith Jay; Lake Crystal
James, William Henry; Lake Crystal
Johnson, Joseph, Edina Mills
Kjelland, Joseph Almon; Rushford
Knoche, Karl George, St. Paul
Lawton, Harry Comegys, St. Paul
Leary, Daniel James; Portage, Wis.
Lier, Edfor Menton; Ashby
Madden, Fred M.; Watertown
Miesen, Peter James; St. Peter
Moore, Thomas John; Chatfield
Munns, Herbert Allen; Minneapolis
Olson, Charles John; Hastings
Radermacher, Harley Adolph;

Barron, Wis.

Rayman, Frederick Luverne; Austin
Remele, Herman Charles; Minneapolis
Sandstrom, Carl L.; Cloquet
Schapler, John Earl; Pipestone
Schmitz, Leroy Christian;

Jamestown, N. D.

Simon, Edwin James; Faribault
Snyder Lynn; Lake City
Spurbeck, Lee; Two Harbors
Tanner, William Paul; Cannon Falls
Trench, William; Dennison
Van Dyke, Arthur Alexander; Alexandria
Whitson, Abram Page; Packwauckee,

Wis.

Will, Mellville Bruce; Mapleton
Williams, Louis; Ashland, Wis.

THIRD YEAR—48

Bakke, Frederick Charles; Stephen

Basford, Clarence Meredith
Bird, Clement Keyes; West Concord
Cahill, John Francis; Waseca
Chapman, Edgar; Minneapolis
Coad, Cecil Walters; Minneapolis
Coulter, Mellville Rankin; Anoka
Crone, William Herman; Minneapolis
Cryderman, William Jacob; Devils Lake,
N. D.

Davis, Oscar Detorest; Detroit
Doris, John R.; St. Paul
Ebersperger, Joseph F.; Minneapolis
Ernst, Max Emil Paul; St. Paul
Gustafson, Richard Elmer; Winthrop
Janecky, Joseph William; Hutchinson
Kohagen, John Benjamin; Duluth
Larson, Arnold John; Minneapolis
Lawrence, Edward; Winthrop
Linder, William Floyd; Minneapolis
Lippit, Dunbar Francis; Duluth
Lund, William Theodore; Dawson
McFadden, Charles Atkinson; Duluth
McPhail, Archie; Spring Valley
Metcalf, George Robert; Osakis
Michalson, Abraham; Hudson, Wis.
Mittelstaedt, Frank August;

Milbank, S. D.

Moos, William H.; St. Cloud
Nesse, George Allen; Mabel
Nordin, Emil Nels; Marine Mills
O'Neil, James W.; Lake City
Pagenkopf, Alford Albert; Mapleton
Philips, Frank John; Lansing
Porter, Irving Lester; Willmar
Quast, Louis Chris; Janesville
Rand, Henry Dane; St. Paul
Rayman, Fay Washington; Austin
Ruggles, Arthur Millette; Osakis
Salisbury, Earl; Minnewauken, N. D.
Schwartz, Charles; Minneapolis
Scribner, Marguerite Sawyer; Minneapolis
Solberg, Chris Bernard; Montevideo
Solem, Paul Oscar; Minneapolis
Swanson, Arthur Emanuel; Minneapolis
Thulien, Carl Augustus; St. James
Walker, Arthur William; Alexandria
Wiethoff, Charles; Minneapolis
Wilson, Edgar Osiander; Kasson
Winter, Seward Randall; Minneapolis

SECOND YEAR—49

Adams, Frank William; Willmar

Allison, James Hawxhurst; Anoka
 Bantle, George Anthony; St. Paul
 Bellingham, Roscoe Charles; Bellingham
 Braafladt, Ole Andrew; Belview
 Brekhus, Peter John; Minneapolis
 Commers, Leo Phillip; Minneapolis
 Dunbar, Francis Warren; Minneapolis
 Dvorak, Joseph William; Renville
 Eckman, Philip; Granite Falls
 Goldblum, Hal Sol; Minneapolis
 Grandy, Alfred William; Bath Gate, N. D.
 Greenberg Jack
 Haarlow, Arnold William; Baldwin, Wis.
 Hanneman, Rudy William; Plainview
 Hanson, William Cornelius; Sleepy Eye
 Harris, Leslie; Park River, N. D.
 Hauck, Oscar W.; Wood Lake
 Higgins, Robert Cloyd Dillon;

Sydney, Ohio

Holm, Edward Olaf; Waubay, S. D.
 Hughes, Carl Leo; Hope, N. D.
 Keller, Frank Raymond; Minneapolis
 Kost, Walter Henry; St. Paul
 Krejci, Fred Otto; Hutchinson
 La Due, Nelson Vivian; Fertile
 Little, Arthur Paul; Appleton
 Lyman, Harry Harlam; Caledonia
 McBeth, Ewing Cleveland, Spokane, Wash
 McKenzie, Morell Dion; St. Paul
 Maker, John Adolph; Lake Crystal
 Maland, James William; Rushford
 Murphy, Dennis Joseph; Lakefield
 Nelson, Harry Wilhelm; Minneapolis
 Nelson, Roy Harrison; Hope, N. D.
 Oberg, Clarence Emanuel; Minneapolis
 Pattridge, Mark Otis; Tracy
 Petri, Carl Hjalmar; Minneapolis
 Plaas, George Arthur; Red Wing
 Reynolds, George Westfall; Minneapolis
 Rounds, William T.; Sleepy Eye
 Samuels, Harvey Charles; Minneapolis
 Saunders, Benjamin Harrison;

Parkers Prairie

Sheils, Arthur George; West Concord
 Smetana, Edward E.; Hopkins
 Stangeby, Torlief Ludwig; Minneapolis
 Stone, Milton Blan; St. Peter
 Thomson, Erwin Emerson;

Minneapolis

Wells, Harry Asa; Minneapolis
 Whitney, Harry Carroll;

Wessington Springs; S. D.

FIRST YEAR—77

Altermatt, Wallace Adolph; Springfield

Bancroft, John Albert; Blue Mounds, Wis.
 Barnum, Elbert Wetherald; Pine City
 Brede, Otto Henry; Minneapolis
 Bren, Edward James; Tabor
 Campbell, William Downer; Wabasha
 Clayton, Harry Frederick; St. Paul
 Cole, Bert LeRoy; St. Paul
 Cooperman, Oscar; Minneapolis
 Cornwall, John Thomas; Eveleth
 Delmore, Hubert Francis; Marshfield,

Wisconsin

De Mots, Edward Gilbert; Sioux Center,
 Iowa

Deslaurier, Albert Joseph; St. Paul
 Dinwoody, George Christian; St. Paul
 Doty, Charles Henry; Minneapolis
 Dvorak, Edward John
 Ernst, Henry William
 Fairchild, Guy Buchanan; Grand Forks,
 N. D.

Flagstad, Carl Oscar
 Fossum, Oscar Eilert; St. James
 Franchere, Harold; Lake Crystal
 Franta, Edward Frank; Montgomery
 Gauthier, Victor Edmund; Cloquet
 Greene, Henry Stewart; Luverne
 Gross, Samuel; Minneapolis
 Hagen, Paul; Crookston
 Hall, Henry Joseph; Rochester
 Harrington, Earl Fremont
 Hartl, Frank Joseph; Kiner, N. D.
 Hartung, William John; St. James
 Haycock, William James; Tracy
 Hedman, Carl Edwin; St. Paul
 Henderson, James L.; St. Paul
 Iltis, Henry Charles; Chaska
 Johnson, George Edwald; Minneapolis
 Johnston, Warren Wesley; Minneapolis
 Kelly, John Patrick; Minneapolis
 Larson, George; Atwater
 Luhman, Archie; Dorer
 Lundquist, Arthur; Minneapolis
 McCarthy, Francis Michael; Brainerd
 McDougall, William; Royalston
 Magnuson, Frank Arthur; St. Paul
 Majerus, John; Helena, Montana
 Maves, Theodore William; St. Peter
 Maybury, Richard Samuel; St. Cloud
 Monroe, William Hutchinson
 Moore, William Arthur; Chatfield
 Mulligan, William Howard; Minneapolis
 Oien, Gerhard Oseander; Boyd
 Oram, Warren Wright; Willmar
 Peterson, Johan Ferdinand; Bemidji

Porter, Walter Raymond; Willmar
Radermacher, Ralph James;

Le Seuer Center

Rauch, Benjamin; Minneapolis
Rexford, Sidney Mark; Spring Valley
Rieke, Harvey Wesley; Fairfax
Ritchie, Hugh; Cannon Falls
Roll, William August; Clontarf
Rosen, Maurice Calvin; Minneapolis
Rudolph, Charles Eugene; Annandale
Seifert, Arthur Vincent; New Ulm
Sieberg, Edward; Oakes, N. D.
Smith, Harvey Willrad; Verndale
Steinfeldt, Abe Arnold; Minneapolis
Stickney, Truman Leander; Minneapolis
Thomas, James Alfred; Spencer, Iowa
Thorburn, Lloyd Mungo; Marshall
Van Gilder, Jesse Stillman; Cannon, Falls
Vig, Richard; Fosston
Walhus, Martin J.; Spring Grove
Walters, Kenneth Hugo; Caselton, N. D.
Washburn, Dwight Wells; Plainview
Weeks, Arthur Freeman; Litchfield
Williams, Robert Edgar; Akeley
Wolf, George Emil; St. Paul

Ziegler, Sam; Stillwater

SPECIALS—19

Benjaminin, Harley George; Minneapolis
Brady, Charles Patrick; Red Lake Falls
Britzuis, Harry Adam; Minneapolis
Broderon, Clarence C.; Fountain City,
Wisconsin

Capron, Harry; Minneapolis
Carpenter, Dwight Jefferson; Minneapolis
Chapman, LeRoy Marion; Lanesboro
Conway, Steven Vincent; Minneapolis
Donald, Raymond Bristol; Minneapolis
Ertl, Rudolph William; Minneapolis
Ingersoll, Howard George; Branierd
Kaiser, Frederick John; Wells
Mittwer, Arthur Edward; Minneapolis
Moorhouse, Raymond Richard;

Minneapolis

Remele, Herman Charles; Minneapolis
Ringnell, Ernest Berrhart; Minneapolis
Schmid, Adolph Robert; Springfield
Scott, Louis William; Waseca
Verne, Paul Conrad; Minneapolis



C
M66uZd
1910 11

The
University of Minnesota
Bulletin

College of Dentistry

1910-1911



Volume XIII

March 1910

No. 2

Entered at the Postoffice
in Minneapolis as second-class matter
MINNEAPOLIS, MINN.

The University catalogues are published by authority of the Board of Regents, as a regular series of bulletins. One bulletin for each college is published every year and in addition a bulletin of general information outlining the entrance requirements of all colleges of the University, and embodying such items as University equipment, organizations and publications, expenses of students, loan and trust funds, scholarships, prizes, etc. Bulletins will be sent gratuitously, postage paid, to all persons who apply for them. In calling for bulletins, the college or school of the University concerning which information is desired should be stated. Address,

THE REGISTRAR,

The University of Minnesota,

Minneapolis, Minnesota.

UNIVERSITY
of
MINNESOTA
MINNEAPOLIS

SCALE OF FEET
0 100 200 300 400 500



CALENDAR FOR 1910-1911

1910

1911

JULY

S.	M.	T.	W.	T.	F.	S.
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

AUGUST

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..

SEPTEMBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..

OCTOBER

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

NOVEMBER

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..

DECEMBER

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..

JANUARY

S.	M.	T.	W.	T.	F.	S.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..

FEBRUARY

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	..	..	..	..
..

MARCH

..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..

APRIL

..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

MAY

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..

JUNE

..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..
..

University Calendar

1910-1911

THE UNIVERSITY YEAR

The University year covers a period of thirty-eight weeks beginning on the second Tuesday in September. Commencement day is always the second Thursday in June.

1910

August	30	Tuesday	Registration closes except for new students
Aug. 30-Sept. 6		week	Fees payable, except for new students.
September 6	12	Week	Entrance examinations, condition examinations, freshman registration and payment of fees.
September	13	Tuesday	First semester begins.
September	26	Monday	University Council meeting.
October	3	Monday	School of Agriculture session begins
October	6	Thursday	Board of Regents meeting
November	10	Thursday	Second quarter begins
November	24	Thursday	Thanksgiving Day, recess three days
November	28	Monday	University Council meeting
December	13	Tuesday	Board of Regents meeting
December	16	Friday	Holiday recess begins 5:40 P. M.

1911

January	3	Tuesday	Holiday recess ends 8:30 A. M.
January	17	Tuesday	Registration for second semester closes
January,	24	Tuesday	Payment of fees for second semester closes
January	31	Tuesday	Second semester begins
February	22	Wednesday	Washington's birthday, holiday
March	22	Wednesday	School of Agriculture session closes
April	6	Thursday	Fourth quarter begins
April	8	Saturday	Easter recess begins 5:40 P. M.
April	17	Monday	Easter recess ends 8:30 A. M.
April	24	Monday	University Council meeting
May	4	Thursday	Board of Regents meeting
May	30	Tuesday	Decoration Day, holiday
June	3	Saturday	Second semester closes
June	4	Sunday	Baccalaureate service
June	5	Monday	Senior class day exercises
June	6	Tuesday	Sigma Xi address
June	6	Tuesday	Senior promenade

June	7	Wednesday	Alumni Day
June	7	Wednesday	Board of Regents meeting
June	8	Thursday	Thirty-ninth Annual Commencement
June	9	Friday	Summer vacation begins

PROGRAM—ENTRANCE EXAMINATIONS

1910-11

Entrance examinations for admission to the various colleges of the University will be conducted according to the following schedule, in Room 205, Library Building.

Any student finding a conflict in his program should report to the Registrar for adjustment.

September	6	Tuesday	9 A. M.	Astronomy Botany Geology Chemistry Physiography Zoology
			2 P. M.	American Government History Economics Physics Commercial Geography
September	7	Wednesday	9 A. M.	English
			2 P. M.	German French Latin Scandinavian
September	8	Thursday	9 A. M.	Elementary Algebra
			2 P. M.	Higher Algebra
September	9	Friday	9 A. M.	Plane Geometry
			2 P. M.	Solid Geometry

Examinations for advanced standing and to remove conditions will be held during September 6-10. Schedule of same will be posted on the bulletin board.

Students must register for examinations in dean's office at least twenty-four hours prior to any examination they may wish to take. See also under Rules for regulation concerning unremoved conditions, etc.

Conditioned students will not be admitted to any examination without presenting receipt from the cashier for the examination fee, to the dean and obtaining entrance ticket.

The University Year for 1911-12 will begin Tuesday, September 12.

The University

THE UNIVERSITY OF MINNESOTA comprises the following named schools colleges and departments:

THE COLLEGE OF SCIENCE, LITERATURE AND THE ARTS

THE COLLEGE OF ENGINEERING AND THE MECHANIC ARTS

THE DEPARTMENT OF AGRICULTURE, including—

THE COLLEGE OF AGRICULTURE

THE SCHOOL OF AGRICULTURE

THE DAIRY SCHOOL

THE SHORT COURSE FOR FARMERS

THE SHORT COURSE FOR TEACHERS

THE SCHOOL OF TRACTION ENGINEERING

THE FORESTRY SCHOOL

THE CROOKSTON SCHOOL OF AGRICULTURE

THE COLLEGE OF LAW

THE COLLEGE OF MEDICINE AND SURGERY, including—

THE TRAINING SCHOOL FOR NURSES

THE COLLEGE OF DENTISTRY

THE COLLEGE OF PHARMACY

THE SCHOOL OF MINES

THE SCHOOL OF ANALYTICAL AND APPLIED CHEMISTRY

THE COLLEGE OF EDUCATION

THE GRADUATE SCHOOL

The Regents of the University have entrusted to their charge:

THE EXPERIMENT STATIONS, including—

THE MAIN STATION AT ST. ANTHONY PARK

THE SUB-STATION AT CROOKSTON

THE SUB-STATION AT GRAND RAPIDS

THE GEOLOGICAL AND NATURAL HISTORY SURVEY

Bulletins of these schools, colleges and departments may be obtained upon application to the University Registrar.

The Board of Regents

CYRUS NORTHROP, LL.D., MINNEAPOLIS	<i>Ex-Officio</i>
The President of the University	
The HON. JOHN LIND, MINNEAPOLIS	1914
The President of the Board	
The HON. ADOLPH O. EBERHART, MANKATO	<i>Ex-Officio</i>
The Governor of the State	
The HON. C. G. SCHULZ, ST. PAUL	<i>Ex-Officio</i>
The State Superintendent of Public Instruction	
The HON. THOMAS WILSON, ST. PAUL	1915
The HON. A. E. RICE, WILLMAR	1915
The HON. B. F. NELSON, MINNEAPOLIS	1916
The HON. PIERCE BUTLER, ST. PAUL	1916
The HON. CHARLES A. SMITH, MINNEAPOLIS	1916
The HON. MILTON M. WILLIAMS, LITTLE FALLS	1913
The HON. W. J. MAYO, ROCHESTER	1913
The HON. HENRY B. HOVLAND, DULUTH	1914

C. D. DECKER, MINNEAPOLIS,
Secretary of the Board.

Executive Officers

THE UNIVERSITY

CYRUS NORTHROP, LL.D., PRESIDENT

ERNEST B. PIERCE, B. A., REGISTRAR

JAMES T. GEROULD, B. A., LIBRARIAN

C. D. DECKER, PURCHASING AGENT

J. D. BREN, CASHIER

THE COLLEGES

JOHN F. DOWNEY, M.A., C.E., DEAN OF THE COLLEGE OF SCIENCE,
LITERATURE AND THE ARTS

FRANCIS C. SHENEHON, C.E., DEAN OF THE COLLEGE OF ENGINEERING
AND THE MECHANIC ARTS

ALBERT F. WOODS, M.A., DEAN AND DIRECTOR OF THE DEPARTMENT
OF AGRICULTURE

WILLIAM S. PATTEE, LL.D., DEAN OF THE COLLEGE OF LAW

FRANK FAIRCHILD WESBROOK, M.A., M.D., C.M., DEAN OF THE
COLLEGE OF MEDICINE AND SURGERY

ALF ED OWRE, D.M.D., M.D., DEAN OF THE COLLEGE OF DENTISTRY

FREDERICK J. WULLING, Phm.D., LL.M., DEAN OF THE COLLEGE OF
PHARMACY

WILLIAM R. APPLEBY, M.A., DEAN OF THE SCHOOL OF MINES

GEORGE B. FRANKFORTER, M.A., Ph.D., DEAN OF THE SCHOOL OF
CHEMISTRY

GEORGE F. JAMES, Ph.D., DEAN OF THE COLLEGE OF EDUCATION

HENRY T. EDDY, C.E., Ph.D., LL.D., DEAN OF THE GRADUATE SCHOOL

ADA L. COMSTOCK, DEAN OF WOMEN

The University Council

At the regular meeting of the Board of Regents of the University, May 31st, 1905, a University Council was established according to the following plan:

I. The name of the body shall be the University Council. It shall consist of the President of the University, the Deans of the various colleges and schools, one elected representative from each college or school for each 400 students or major fraction thereof, and one representative of the general alumni association.

II. The elected members shall serve for a period of one year. They shall be chosen from the various faculties at the time of the selection of standing committees. The representative of the general alumni association shall be chosen by that body at its annual meeting from among the alumni who are not members of the University.

III. The Council shall be authorized to—

a) Appoint the following committees or the faculty representation thereon:

The University auditing committee

The University press committee

The committee on athletics

The committee on University relations to other institutions of higher learning.

The committee on health and sanitation

The committee on commencement and other University functions

The committee on catalogue, programs and courses of study

The committee on student entertainments and social affairs

And such other committees as the general University interests may require.

b) Receive reports from such committees and to make such recommendations as may be required.

c) Consider and act upon any matter of general University interest beyond the province of a single faculty which may be referred to it by the President of the University or any faculty.

IV. The Council shall hold stated meetings upon the first Monday of October, December, April and June, and such other meetings as the President of the University may call.

Representatives to the Council

The University

PRISIDENT CYRUS NORTHROP

The College of Science, Literature and the Arts

DEAN JOHN F. DOWNEY

PROFESSOR H. F. NACHTRIEB

PROFESSOR J. C. HUTCHINSON

PROFESSOR CARL SCHLENKER

PROFESSOR NORMAN WILDE

The College of Engineering and the Mechanic Arts

DEAN FRANCIS C. SHENEHON

PROFESSOR GEORGE D. SHEPARDSON

The College and School of Agriculture

DEAN ALBERT F. WOODS

PROFESSOR JOHN T. STEWART

PROFESSOR EDWARD M. FREEMAN

The College of Law

DEAN WILLIAM S. PATTEE

PROFESSOR HENRY J. FLETCHER

The College of Medicine and Surgery

DEAN F. F. WESBROOK

PROFESSOR THOMAS G. LEE

The College of Dentistry

DEAN ALFRED OWRE

The College of Pharmacy

DEAN FREDERICK JOHN WULLING

The School of Mines

DEAN WILLIAM R. APPLEBY

The School of Chemistry

DEAN GEORGE B. FRANKPORTER

The College of Education

DEAN GEORGE F. JAMES

The Graduate School

DEAN HENRY T. EDDY

The Dean of Women

ADA L. COMSTOCK

The University Library

JAMES T GEROULD

General Alumni Association

DAVID P. JONES

University Council Committees

The University Auditing Committee

PROFESSORS SIGERFOOS, FLETCHER, MITCHELL, SPRINGER,
WASHBURN

The Committee on Athletics

PROFESSORS PAIGE, HARDING, D. P. JONES, LITZENBERG,
ROBINSON

The Committee on Grounds and Sanitation

PROFESSORS WESBROOK, APPLEBY, BASS, BRACKEN, FLATHER,
FRANKFORTER, WOODS

The Press Committee

PROFESSORS SCHAPER, BEACH, CONSTANT, JOHNSTON, THOMAS

The Committee on Commencement and other University Functions

PROFESSORS NACHTRIEB, BUTTS, JAMES, KIRCHNER, PATTEE,
SCHLENKER, DR. SCOTT, WILDE

The Committee on Student Entertainments and Social Affairs

PROFESSORS PIKE, BASS, BAUER, CLEMENTS, COMSTOCK, COOKE,
OWRE

The Committee on University Relations to other Institutions of Higher Learning

PROFESSORS DOWNEY, BOTHNE, EDDY, GREEN, JAMES, LEE,
SHENEHON

The Committee on University Extension and University Lectures

PROFESSORS JAMES, GRAY, HAECKER, A. E. HAYNES, JENKS, LEE,
WULLING

The Committee on the Library

PROFESSORS EDDY, FLETCHER, GEROULD, LEE, REYNOLDS,
SHENEHON, VAN BARNEVELD, WEST, JOHN ZELENY

The Department of Medicine

The Department of Medicine includes the following colleges:

The College of Medicine and Surgery

FRANK F. WESBROOK, M.D., C.M., Dean.

THOMAS G. LEE, B.S., M.D., Secretary and Librarian, Department of Medicine.

The College of Dentistry

ALFRED OWRE, D.M.D., M.D., Dean.

The College of Pharmacy

FREDERICK J. WULLING, Phm.D., LL.M., Dean.

Each College is self-governed as to its internal affairs, having its own faculty and an independent curriculum. The laboratories and staff of the College of Medicine and Surgery provide instruction for all students in each of the three colleges, as required, in the following branches:

Gross and microscopic anatomy, physiology, chemistry, pathology, bacteriology and pharmacology.

LABORATORY BUILDINGS AND EQUIPMENT

Provision has been made on the recently acquired extension to the University campus of a site of several acres on the bluffs overlooking the Mississippi river, upon which will be erected the new buildings for the department.

Three buildings of this group have already been provided for by legislative appropriation and gift—an Institute of Anatomy, a Medical Science building for Physiology, Pharmacology, Experimental Medicine and Surgery, and the Elliott Memorial Hospital.

The work of the department is at present given in eight buildings upon the University campus, exclusive of the three mentioned above, and in the various hospitals and dispensaries of the two cities.

The location of the medical buildings in a central portion of the campus offers all the advantages to student and staff which come from a close association with the other University departments, such as general library, laboratories of physics, chemistry, biology, botany, geology, etc.

Millard Hall, a four-story, brown stone, and cream brick building (65x125 ft.), the oldest of any in the group, contains a faculty room, a large amphitheatre and lecture rooms, library and reading rooms of the

department together with the laboratory of pharmacology and materia medica. In addition, the College of Dentistry is temporarily provided with rooms.

The Medical Science building, a large four-story brick building, (75x150 ft.), is especially designed for laboratories. This building houses the department of histology and embryology and the department of physiology of this college. A portion of the south wing is temporarily occupied by the College of Pharmacy.

The department of Anatomy occupies the four floors of the north wing and a part of the center of the building and the department of Physiology occupies the greater part of the south wing and the center of the building.

Chemistry is taught in two buildings. The main, four-story, brick building (198x78 ft.), constitutes the headquarters of the School of Chemistry. The laboratory of medical chemistry is a one-story, brick building devoted to the use of this department and is included as a part of the Medical Quadrangle. It is equipped with an amphitheatre, two teaching laboratories (3,800 sq. ft.), preparation rooms, balance room, storage rooms and private offices of the staff of this department.

The laboratory of anatomy is a two-story, and basement building.

The Institute of Public Health and Pathology is the newest and largest of any in the Medical Quadrangle.

Five buildings are used for the University Hospital and the Training School for Nurses.

LIBRARY OF MEDICAL DEPARTMENT

Thomas G. Lee., B.S., M.D., Librarian

The medical library consists of the following collections: The general clinical library, the libraries of the colleges of Dentistry and Pharmacy, the departmental libraries of pathology and bacteriology, histology and embryology, anatomy, and physiology. These contain nearly 10,000 bound volumes, 14,000 unbound volumes, monographs, reprints, dissertations, etc., and about 175 current periodicals. In addition to the above, the libraries of the State Board of Health, of Hennepin County Medical Society, containing 4,000 volumes and 50 journals, and of the Ramsey County Medical Society with some 7,000 volumes and 150 journals, give the student additional opportunity to consult all the more important medical publications.

The College of Dentistry

FACULTY

- CYRUS NORTHROP, LL.D., President
ALFRED OWRE, D.M.D., M.D., C.M., Dean, Professor of Operatic Dentistry and Dental Metallurgy
RICHARD OLDING BEARD, M.D., Professor of Physiology and Director of the department of Phpsiology and Pharmacology
THOMAS G. LEE, B.S., M.D., Professor and Director of the Department of Anatomy
GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry
FRANK F. WESBROOK, M.A., M.D., Professor of Pathology and Bacteriology
THOMAS B. HARTZELL, M.D., D.M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery
OSCAR A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia
CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy
F. W. SPRINGER, E.E., Professor of Electrical Engineering
JAMES M. WALLS, D.M.D., Clinical Professor of Operative Dentistry
FOREST H. ORTON, D.D.S., Professor of Crown and Bridge-Work
H. S. GODFREY, D.M.D., Clinical Professor of Operative Dentistry
JAY N. PIKE, D.D.S., Clinical Professor of Orthodontia
IRA HARRIS DERBY, B. S., Assistant Professor of Chemistry
R. H. MULLIN, B.A., M.B., Assistant Professor of Pathology and Bacteriology
WINFIELD S. NICKERSON, Sc.D., M.D., Assistant Professor of Histology and Embryology
H. E. ROBERTSON, A.B., M.D., Assistant Professor of Pathology and Bacteriology
F. H. SCOTT, Ph.D., D.Sc., M.B., Assistant Professor of Physiology
M. R. WILCOX, M.D., Assistant Professor of Physiology
NORMAN J. COX, B.S., D.M.D., Instructor in Operative Dentistry
G. M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy
C. F. DISEN, M.D., Demonstrator of Anatomy
E. FIDLAR, M.B., Demonstrator of Pathology and Bacteriology

- R. O. GREEN, D.D.S., Instructor in Operative Dentistry
 CHARLES A. GRIFFITH, D.D.S., Instructor in Operative Dentistry
 J. A. HANDY, Ph.C., Instructor in Chemistry
 EARLE B. HARE, B.S., M.D., Instructor in Anatomy
 MARY V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy
 U. E. HEDDY, D.D.S., Instructor in Crown and Bridge-Work
 J. H. HEWITT, A.B., M.D., Demonstrator in Pathology and Bacteriology
 W. H. HUNTER, Ph.D., Instructor in Chemistry
 HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy
 J. F. LEMSTROM, M.D., Associate in Histology and Embryology
 THOMAS R. MARTIN, A.B., M.D., Demonstrator of Pathology and Bacteriology
 HERMAN A. MAVES, D.D.S., Instructor in Operative Dentistry
 OSCAR OWRE, M.D., Instructor in Oral Surgery
 A. A. PAGENKOPF, D.D.S., Instructor in Crown and Bridge-Work
 J. F. SCHEFCIK, B.S., Ph.G., M.D., C.M., Instructor in Materia Medica
 J. P. SEDGWICK, B.S., M.D., Instructor in Physiological Chemistry
 E. T. TINKER, D.D.S., Instructor in Operative Dentistry
 ANDREW J. WEISS, Instructor in Technics
 AMOS S. WELLS, B.A., D.D.S., Instructor in Crown and Bridge-Work
 CHARLES WIETHOFF, D.D.S., Instructor in Crown and Bridge-Work
 ———, Instructor in Anatomy
 F. R. WRIGHT, D.D.S., M.D., Instructor in Anaesthesia and Oral Surgery
 P. J. BREKHUS, Student Assistant in Crown and Bridge-Work
 W. J. FINKE, Student Assistant in Electricity
 A. P. LITTLE, Student Assistant in Crown and Bridge-Work
 H. C. WHITNEY, Student Assistant in Dental Anatomy
-

MRS. M. C. CLYDE, Professional Nurse
 MISS LUCY E. HALBERT, Professional Nurse
 MISS AGNES G. ELSON, Professional Nurse
 A. L. MOORE, Infirmary Clerk

ERRATA

ADD

ROLAND R. JONES, D.D.S., Instructor in Operative Dentistry
 WILLIAM F. LASBY, B.A., D.D.S., Instructor in Prosthetic Dentistry

The College of Dentistry

FACULTY

CYRUS NORTHROP, LL.D., President

ALFRED OWRE, D.M.D., M.D., C.M., Dean, Professor of Operatic Dentistry and Dental Metallurgy

RICHARD OLDING BEARD, M.D., Professor of Physiology and Director of the department of Phpsiology and Pharmacology

THOMAS G. LEE., B.S., M.D., Professor and Director of the Department of Anatomy

GEORGE B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry

FRANK F. WESBROOK, M.A., M.D., Professor of Pathology and Bacteriology

THOMAS B. HARTZELL, M.D., D.M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery

OSCAR A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia

CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy

F. W. SPRINGER, E.E., Professor of Electrical Engineering

JAMES M. WALLS, D.M.D., Clinical Professor of Operative Dentistry

FOREST H. ORTON, D.D.S., Professor of Crown and Bridge-Work

H. S. GODFREY, D.M.D., Clinical Professor of Operative Dentistry

JAY N. PIKE, D.D.S., Clinical Professor of Orthodontia

IRA HARRIS DERBY, B. S., Assistant Professor of Chemistry

R. H. MULLIN, B.A., M.B., Assistant Professor of Pathology and Bacteriology

WINFIELD S. NICKERSON, Sc.D., M.D., Assistant Professor of Histology and Embryology

H. E. ROBERTSON, A.B., M.D., Assistant Professor of Pathology and Bacteriology

F. H. SCOTT, Ph.D., D.Sc., M.B., Assistant Professor of Physiology

M. R. WILCOX, M.D., Assistant Professor of Physiology

NORMAN J. COX, B.S., D.M.D., Instructor in Operative Dentistry

WILLIAM F. WILSON, D.D.S., Instructor in Prosthetic Dentistry and Dental

- R. O. GREEN, D.D.S., Instructor in Operative Dentistry
CHARLES A. GRIFFITH, D.D.S., Instructor in Operative Dentistry
J. A. HANDY, Ph.C., Instructor in Chemistry
EARLE B. HARE, B.S., M.D., Instructor in Anatomy
MARY V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy
U. E. HEDDY, D.D.S., Instructor in Crown and Bridge-Work
J. H. HEWITT, A.B., M.D., Demonstrator in Pathology and Bacteriology
W. H. HUNTER, Ph.D., Instructor in Chemistry
HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy
J. F. LEMSTROM, M.D., Associate in Histology and Embryology
THOMAS R. MARTIN, A.B., M.D., Demonstrator of Pathology and Bacteriology
HERMAN A. MAVES, D.D.S., Instructor in Operative Dentistry
OSCAR OWRE, M.D., Instructor in Oral Surgery
A. A. PAGENKOPF, D.D.S., Instructor in Crown and Bridge-Work
J. F. SCHEFCIK, B.S., Ph.G., M.D., C.M., Instructor in Materia Medica
J. P. SEDGWICK, B.S., M.D., Instructor in Physiological Chemistry
E. T. TINKER, D.D.S., Instructor in Operative Dentistry
ANDREW J. WEISS, Instructor in Technics
AMOS S. WELLS, B.A., D.D.S., Instructor in Crown and Bridge-Work
CHARLES WIETHOFF, D.D.S., Instructor in Crown and Bridge-Work
———, Instructor in Anatomy
F. R. WRIGHT, D.D.S., M.D., Instructor in Anaesthesia and Oral Surgery
P. J. BREKHUS, Student Assistant in Crown and Bridge-Work
W. J. FINKE, Student Assistant in Electricity
A. P. LITTLE, Student Assistant in Crown and Bridge-Work
H. C. WHITNEY, Student Assistant in Dental Anatomy
-

MRS. M. C. CLYDE, Professional Nurse
MISS LUCY E. HALBERT, Professional Nurse
MISS AGNES G. ELSON, Professional Nurse
A. L. MOORE, Infirmary Clerk

General Information

COLLEGE YEAR

The twenty-third annual course of study in this College will begin Tuesday, September 13th, and will close June 3rd., 1911. Commencement exercises will occur in common with other departments of the University.

For schedule of lectures, announcements, changes in college rules, etc., see bulletin board.

Rules and regulations of the infirmary and laboratories are posted in their respective places.

CURRICULUM

The course in the College of Dentistry leads to the degree of doctor of dental surgery. It covers a period of three years of collegiate study, each year representing nine months in actual residence.

The studies are graded, so far as practicable, throughout the three years and this grading is arranged with careful reference to the relation which the subjects naturally bear to each other.

The work of the first year deals with the so-called scientific or laboratory branches; while that of the last two years includes the principles and practice of dentistry, its associated specialties and the application of scientific or laboratory methods to clinical experience.

SIX-YEAR COURSE LEADING TO THE DEGREES OF B. A. AND D. D. S.

The University now offers an optional six year course of study. The first three years of the course are given in the College of Science, Literature and the Arts. The last three years are given in the College of Dentistry. It leads to the bachelor's degree at end of the first four years and to the degree of doctor of dental surgery at the end of the six year course.

SUMMARY OF EXPENSES

	1st year	2d year	3d year
Tuition, Instruments, Tools and Books	\$200 00	\$350 00	\$175 00

STUDENT LOAN FUNDS

THE GILFILLAN TRUST FUND

The Hon. John B. Gilfillan has given to the University the sum of fifty thousand dollars, yielding an annual income of two thousand dollars,

to be used by the Board of Regents to assist worthy students, needing such aid, to secure an education. The Regents are empowered to give this aid in the way of loans or gifts, according to the circumstances of the case. As a rule the fund is used as a loan fund, and a small rate of interest is charged. The details of the regulations which have been adopted by the Regents for the administration of the fund may be learned by addressing the President of the University.

ALUMNI ASSOCIATION

An association of the graduates of the college has its annual meeting during commencement week.

President, E. F. Wanous, Syndicate Block, Minneapolis.

Secretary, B. A. Sandy, Andrus Building, Minneapolis.

Rules and Regulations of The College

REQUIREMENTS FOR ADMISSION

Graduates of the following courses, provided their credits satisfy the requirements as indicated in the following list of subjects, are admitted to the College of Dentistry without conditions:

- (a) Any four-year course of a Minnesota State high school
- (b) A four-year course of other accredited schools in the state
- (c) A four-year course of schools in any other state accredited to the state university of that state
- (d) The advanced Latin or English course of the Minnesota State normal schools.

The term CREDIT means not less than five recitations of forty minutes each per week for a period of thirty-six weeks. In manual subjects and kindred courses a credit means the equivalent of ten recitation periods per week for thirty-six weeks.

Required of All

English (see foot note)	. . . . .	*four credits
Elementary Algebra	. . . . .	one credit
Plane Geometry	. . . . .	one credit
Latin	. . . . .	one credit
Manual Training	. . . . .	one credit

Electives

(Seven credits must be selected from the following list)

MATHEMATICS

- Higher algebra, one half credit
- Solid geometry, one-half credit

LATIN

- Caesar, four books, one credit
- Cicero, six orations, one credit
- Virgil, six books, one credit

GREEK

- Grammar, one credit
- Anabasis, four books, one credit

*Three credits will satisfy the English requirement when the applicant presents four credits in foreign language including two years of Latin. In this case, eight credits must be selected from the list of electives.

GERMAN

- Grammar, one credit
- Literature, one credit

FRENCH

- Grammar, one credit
- Literature, one credit

SPANISH

- Grammar, one credit
- Literature, one credit

SCANDINAVIAN LANGUAGES

- Grammar, one credit
- Literature, one credit

HISTORY

- Ancient to Charlemagne, one credit
- Modern, from Charlemagne, one credit
- English, one half credit
- Senior American, one half credit

ECONOMICS

- Elementary Economics, one half credit
- Commercial Geography, one half or one credit
- History of Commerce, one half credit

AMERICAN GOVERNMENT, one half credit

PHYSICS, one credit

CHEMISTRY, one credit

BOTANY, one half or one credit

ZOOLOGY, one half or one credit

ASTRONOMY, one half credit

GEOLOGY, one half credit

PHYSIOGRAPHY, one half credit

BUSINESS SUBJECTS, accepted only as parts of a well defined course

- Economic History of England, one half credit
- Economic History of the United States, one half credit
- Business law, one half credit
- Business arithmetic, one half credit
- Elementary bookkeeping, one credit
- Advanced bookkeeping and business practice, one credit
- Stenography and typewriting, two credits
- Business spelling and correspondence, one half credit

MANUAL SUBJECTS, accepted only as parts of a well defined course

- Freehand drawing, two credits
- Mechanical drawing, two credits
- Shop work, two credits
- Modeling and wood carving, one credit
- Domestic art and science, two credits

Students having no credit in manual training will be required to demonstrate, by test, the possession of mechanical ability.

Certificates of graduation must be presented on the regular University admission blanks, which may be obtained from the registrar.

Students not having credentials as indicated in either (a), (b), (c), or (d), are required to take the regular entrance examinations. See program page 3.

State High School Board certificates are accepted in lieu of examinations in the subjects they represent.

DESCRIPTION OF SUBJECTS ACCEPTED FOR ADMISSION

The following statements indicate in a general way the preparation which the University expects in the various subjects accepted for admission.

ENGLISH (four years)

In order to secure a definite plan of study and unity of method on the part of preparatory schools, the entrance requirement in English is outlined below somewhat in detail. To satisfy this requirement a four-year course of not less than four hours per week must be pursued. The headings under which instruction will naturally fall are;

- (a) English Classics
- (b) The Principles of Rhetoric
- (c) Practice in Written Expression in each of the Four Years of the High School Course, on an average of not Less than One Hour a Week.

(a) English Classics should include a critical reading, in class, of English masterpieces. The following are suggested as well adapted for such study; Shakespeare's *Macbeth*; Milton's *Paradise Lost*; Carlyle's essay on Burns. In the study of these works the student should know the leading facts connected with the author and his time, he should become familiar with the subject matter of the work and thoroughly at home with the story, and should have a clear idea of the form and structure of the work as a whole.

A less critical knowledge of other standard or classic works, which may perhaps be read by the student at home, with written reports and brief oral discussions in class, is desirable. The following works are noted as indicative of the minimum amount of work expected; at least two of Shakespeare's plays, beside the one read in class, one of Irving's works, one of Hawthorne's novels, one of Stevenson's novels, one of Webster's orations.

(b) The work in the principles of composition should include the principles and technical terms of ordinary texts upon the subject, whether acquired by the direct study of such texts or mainly by the study of selected English masterpieces. It should not be forgotten that this is not an end in itself, but simply a means of teaching the student the correct use of English.

(c) An average of not less than one hour each week in each of the four years of the high school course should be devoted to practice in written expression, subject to the criticism either oral or written, of the teacher. The instructor may choose such topics as local conditions may require or make most profitable, but whatever line of work is pursued, the student should be taught to use language correctly and forcibly and learn to express himself clearly and logically in writing.

ELEMENTARY ALGEBRA (one year)

The four fundamental operations for rational algebraic expressions; factoring; highest common factor; lowest common multiple; fractions, including complex fractions; linear equations, both numerical and literal, containing one or more unknown quantities; problems involving linear equations; binomial theorem for pos-

itive integral exponents; powers and roots of rational algebraic expressions and of numbers.

HIGHER ALGEBRA (one half year)

This course should begin with a thorough review of the work of the previous course, to the end that principles should be learned and theorems and rules rigorously demonstrated. Numerous problems which involve putting questions into equations should be solved, attention being paid to gaining an understanding of the principles involved rather than to mere dexterity in solution.

The additional topics to be treated are:—theory of exponents; surds; quadratic equations, both numerical and literal; equations with one or more unknown quantities that can be solved by the methods of quadratic equations; progressions; graphs.

PLANE GEOMETRY (one year)

The usual theorems and constructions contained in the best text books, including the general properties of plane rectilinear figures; the circle and measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle.

Special emphasis should be placed upon developing the ability to solve original exercises, loci problems, and problems involving the mensuration of lines and surfaces.

SOLID GEOMETRY (one half year)

The usual theorems and constructions contained in the best text books including the relation of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangle.

Original exercises, loci problems and problems involving the mensuration of surfaces and solids should form an important part of the course.

LATIN GRAMMAR (one year). This will include the subjects of orthography, etymology and syntax. Proficiency is particularly desired in the following subjects; the analysis of the verb forms, the rules of syntax, and the principal parts of the irregular verbs.

CAESAR (one year). The student should complete the first four books or selections from the seven books equivalent to four; or three books, with thirty pages of Cornelius Nepos, or two books with sixty pages of Cornelius Nepos. Special attention should be paid to the translation of passages of the text into correct and idiomatic English; grammatical questions connected with the text, more especially on the subjunctive mood, indirect discourse and the sequence of tenses. The student is expected to be familiar with the life of Caesar and an account of his wars.

CICERO (one year). Any six orations from the following list should be studied; *AGAINST CATILINE*, *POET ARCHIAS*, *LIGARIUS*, *MARCELLUS*, *MANILIAN LAW* (to count as two orations), the fourteenth *PHILIPPIC*. The student should also be familiar with the life of Cicero.

VIRGIL (one year). This study should include six books of the *AENEID*, or five of the *AENEID* and one of the *METAMORPHOSIS* of Ovid, or the *ECLOGUES*. The student should be familiar with the life of Virgil and an account of his times and writings. A correct rythmical reading of the text is to be encouraged.

GREEK GRAMMAR (one year)

XENOPHON'S ANABASIS (one year) —Four books

GERMAN (two years)

First year the pupil should acquire;

- (1) A correct pronunciation, training of the ear, eye and organs of speech.
- (2) A vocabulary of a thousand words of every day use; facility in combining these words into simple sentences. As a means to this, 100 to 150 pages of easy narrative prose and poetry should be read, from which questions and answers may be formed. To test the student's memory and knowledge of the word-order he should relate or write out the story anew in his own words.

- (3) From two to three hundred German idioms.

(4) The essentials of German grammar, to be taught by means of oral and written exercises based upon the reading lessons.

Second year the pupil should

(1) Read one hundred and fifty to two hundred pages of prose and poetry.

(2) Practice in reading smoothly and with expression.

(3) Carefully translate selected passages of the text into idiomatic English.

To translate easy sentences which the student already understands is a waste of time.

(4) Translate sentences from English into German, using words and idioms of the text read.

(5) Study topically German grammar, chief rules of orthography, etymology and syntax; illustrate these by words, phrases and sentences selected or composed by the student.

FRENCH (two years). This work comprises the principles of French grammar, including acquaintance with the verb, regular and irregular, an ability to translate easy English sentences into French and simple French prose into English.

SPANISH (two years). The first year's work includes grammar and reader; second year, grammar reviewed, reading of some modern writer, composition and conversation.

SCANDINAVIAN LANGUAGES, Norwegian, Swedish or Icelandic (two years). The student should acquire the principles of grammar, ability to read and translate ordinary prose and easy poetry, also to translate from English, and a fair acquaintance with the history of Scandinavian countries.

ANCIENT HISTORY (one year.

(a) This study should begin with from five to seven weeks upon the oriental peoples who have most influenced European development, noting the early civilizations in the valleys of the Nile and Euphrates, the spreading and meeting of these civilizations in the intermediate region, with notice of the more important states in that district, and the union of the East under Persia. This survey should aim to give an idea of the reach of recorded history, of the distinguishing features of the successive oriental nations, and of their more important influence upon later European development.

(b) In the Greek and Roman age emphasis should be put upon the evolution of institutions, and considerable attention should be paid to the later Hellenistic period, after the rise of Macedon, and to the Roman Empire, with its bearing upon subsequent history. Some of the work should be illustrated by the use of sources, and maps should be used constantly.

(c) The subject should be carried down to the establishment of Charlemagne's empire. This will bring together all the chief lines of influence which were afterward to make our modern world, will show the meaning of the preceding eras as can not be done if the study stops at an early date, and will leave the subject at a period of comparative order and simplicity.

MODERN HISTORY (one year). From Charlemagne to the present. The topics to which special attention are called are the period of disorder after Charlemagne and the consequent rise of feudalism, the Holy Roman Empire and the papacy, the medieval church, the crusades, the free cities, the rise of national monarchies, the intellectual renaissance and the protestant reformation, the French revolution and the subsequent democratic movements in politics and industry.

It is desirable to give at least half of the year to this last period from 1789.

ENGLISH HISTORY (one-half year). The Saxon period should be passed over rapidly. In the remainder of the work, besides the narrative, constitutional points should receive attention, and easily accessible documents, like Magna Charta, should receive careful study.

SENIOR AMERICAN HISTORY (one-half year). No attempt should be made to cover the whole field in this time. Either the colonial history or the period from 1783 to 1832 offers quite enough material. In any case, considerable use should be made of collections of documents, and sources.

ELEMENTARY ECONOMICS (one-half year). In the study of economics it is desirable to avoid two extremes, abstract theory on the one hand, and controversial questions such as the tariff, trusts, and trade unions on the other hand. Emphasis should be placed on historical and descriptive matter, especially relating to the economic development of England and the United States. Some good elementary text book should be mastered and a reasonable amount of collateral reading required.

COMMERCIAL GEOGRAPHY (one-half or one year). As the history of commerce is concerned with the past, so commercial geography describes and seeks to explain the commerce of today. The work should cover the ways in which commerce depends on nature and on man, the development of means of transportation and communication, and a detailed study of the several commercial nations of the world with reference to resources, industries, transportation facilities and commerce. It should be based on a text book supplemented by map work and assigned readings.

HISTORY OF COMMERCE (one-half or one year). The history of commerce forms the natural introduction to the study of present economic conditions. It would be well to give special attention to the economic history of England and the United States. The work should be based on a text book, supplemented by carefully directed map work and assigned readings. This should be preceded by a year course of medieval and modern European history.

AMERICAN GOVERNMENT (one-half year). This should be a study of our government, national, state and local as it is organized and actually operated today. Students should be made familiar with the purpose and salient features of important instruments of government and other public acts like the Declaration of Independence, Articles of Confederation, the constitution of the United States, the constitution of Minnesota, and a local city or village charter.

In no case, however, should the instruction consist wholly or largely of an analysis of documents. It should rather aim to impart information essential to intelligent, active citizenship, such as the division of the government into departments, their organization and function; the methods of nominating, electing, and appointing; men to office; of framing and amending constitutions, city charters and statutes; of drawing grand and petit juries and the duty of the citizen to serve on them; the distinction between common law, state law, and constitutional law, between equity, civil and criminal cases.

To make the government seem a real working organization to the student, he should be encouraged to observe public proceedings by attending school meetings, town meetings, sessions of the county commissioners, city council, state legislature, a trial in court, and party primaries and conventions. He should also be led to read about and observe public affairs for himself. To that end let him collect statistics and accounts of work done by particular offices and departments from published reports and by personal inquiry.

PHYSICS (one year). The course should aim throughout to encourage accurate thought on the part of the student. For this reason the time should be spent mainly on the explanation and systematization of physical facts of common experience with which the student is already more or less familiar, rather than in the acquisition of new facts. The fundamental numerical relations should be emphasized by varied simple problems. Most of the qualitative experiments should be done by the instructor. All of the experiments performed by the student should be done with the greatest possible care and accuracy, and a neat record should be kept of all such work. With the text-books now commonly used the student will receive more beneficial training if the subject-matter studied is confined to the mechanics of solids and fluids, heat and either sound and light or electricity and magnetism.

CHEMISTRY (one year). The full year's work should include a study of both the non-metals and metals with laboratory experiments illustrating the common chemical laws and the commoner chemical reactions.

BOTANY (one or one-half year). The course in botany should extend through the school year whenever it is possible, even if as much time cannot be given to it each week as when it occupies a single semester. The course should follow as closely as possible the nature and work of plants during the changing seasons of the year. The major portion of the work should be with living plants, or with plant structures outdoors and within. The microscope should be used only for a brief study of the general structure of root, stem, leaf and flower, and for a short survey of flowerless plants. The work should be scientific in method, but practical in outlook. It may well include a large amount of the science and practise of agriculture in so far as these are practicable in an elementary study of plants. The naming of the common plants of the neighborhood, both cultivated and native, the study of plant parts from the seed to maturity, simple experiments with plant functions, and the uses of plants in everyday life should constitute the larger part of the course. Since conditions vary in nearly every school, the best results will be obtained if teachers will refer their problems directly to the department of botany of the University.

ZOOLOGY (one or one-half year). The course of zoology, whether a half year or a year course, should be a natural history rather than a modern morphological course. Collecting and classifying (as a means) should be encouraged as much as possible. Animals should be studied as living units, in their relation to one another and their environment. The general and special structural feature in relation to the habits, the food and manner of obtaining it, the enemies and means of protection against them, hibernation, migration, the differences in habits, form and structure between the old or mature animal and the young, the relation of parents to their offspring, etc.—in short, all about the life of the animal under consideration should be made out by direct observation of the animal in its natural home and in confinement.

The course, on the whole, should aim to foster and develop a love for nature train the power of observation toward accuracy and give a healthful stimulation to the imagination. The pupil should be guarded against the habit of confounding the facts of observation with his interpretation and his judgments.

The animals for direct observation should be selected from as many branches of the animal kingdom as possible, and the changes during the year in the character of the fauna of the locality in general as well as of some particular region should be noted. In some localities the work will of necessity be largely restricted to land and air animals, but no locality in Minnesota is so poor in animal life that very profitable work cannot be laid out along the line indicated above.

It will be noticed that such a course of necessity includes so-called laboratory work. The amount and extent of the laboratory work will depend upon conditions, but even under the best conditions it is hardly advisable to go into detailed dissection and embryology. Continued, repeated, and close observation, aided now and then, by a simple hand lens or a compound microscope, will reveal an abundance of material and opportunity for disciplining the mind.

ASTRONOMY (one-half year). An elementary course in general astronomy as presented in any good modern text-book will satisfy this requirement.

GEOLOGY (one-half year). These subdivisions should receive special attention; physiographic geology, which treats of the building of the land and the evolution of its existing contours; geo-dynamics, the study of the forces, atmosphere, water, terrestrial heat, plants and animals modifying the earth; and a brief survey of historical geology.

PHYSIOGRAPHY (one-half year). The following topics should be emphasized: meteorology, the leading facts relating to the atmosphere and its phenomena, includ-

ing some acquaintance with the work of the United States weather bureau; land sculpture, as it treats of the origin, development and decadence of land forms, and the influence of these processes on the physical environment of man.

BUSINESS SUBJECTS

THESE ARE ACCEPTED FOR ADMISSION ONLY WHEN CONSTITUTING PARTS OF A BUSINESS COURSE

The following syllabi are offered by the University in order that the schools may be informed concerning the preparation expected in business subjects, in view of the fact that the graduates of business courses are now admitted to certain colleges of the University on the same footing as the graduates of other courses.

It is not intended or expected that many schools, or perhaps any one school, will offer all the subjects indicated. Not to exceed forty per cent of the units for admission should in any case be taken from the list of technical business subjects named below. The other sixty per cent should embrace the required English and mathematics, together with some work in history, science and the modern languages. The University is strongly of the opinion that no business course should be offered which does not include at least two years of some one modern language.

Under the head of business subjects are included two distinct lines of work: first, courses dealing with the history, description, theory and law of business, including the history of commerce, commercial geography, elementary economics and business law; second, courses dealing with the technique of business. The latter may be further subdivided into the mathematics of business, including business arithmetic, bookkeeping and business practice and the language of business, including stenography, typewriting and business correspondence.

ECONOMIC HISTORY OF THE UNITED STATES (one-half year). A study of American history with special attention to the economic factor. It should be based on some text book such as Wright, Coman or Nogart and supplemented by collateral reading, especially in books such as Semple and Brigham on geographic influences.

This course will naturally follow the one on English history and may take the place of the usual political American history.

ECONOMIC HISTORY OF ENGLAND (one-half year). A study of English history with special reference to causes and effects of her economic development. It should be based on some of the smaller economic histories such as Cheyney, Price or Cunningham and McArthur.

This course, where given, will naturally follow the courses in general European history, and may take the place of the usual political English history.

BUSINESS LAW (one-half year). The object of this study is not to make "every man his own lawyer" but rather to enable him to keep out of legal complications. Text book supplemented by study of a few typical cases, and practice in drawing up ordinary legal papers such as bills, notes, checks, etc.

BUSINESS ARITHMETIC (one-half year). The object is first of all, absolute accuracy and secondly speed in ordinary business computations. The topics to be emphasized are fundamental operations, common fractions having as denominator 2, 3, 4, 6 and 8, a few common weights and measures, percentage and its applications, and useful short methods, especially the use of interest and other calculation tables. The work should be based on a text book, supplemented by numerous live exercises from current sources.

ELEMENTARY BOOKKEEPING (one year). A text book should be employed with exercises so arranged that no two pupils will do exactly the same work, and no credit should be allowed unless the work is done neatly, accurately and at a satisfactory rate of speed. It is suggested that double periods be provided, and all work be done in class under the eye of the instructor. The set used should include the journal, cash book, sales book, ledger, check book, bank pass book and trial balance book.

ADVANCED BOOKKEEPING AND BUSINESS PRACTICE (one year). Thorough drill on standard business forms, such as bills, receipts, checks, notes, etc., also on the use and meaning of business symbols and abbreviations. The student should become acquainted with the bill book and invoice book, and loose leaf and voucher systems of bookkeeping. Each student should carry on a business of his own, first as an individual, then as a partnership, and finally as a corporation. Credit on this course should mean that the student lacks only age and actual business experience to become a competent bookkeeper.

STENOGRAPHY AND TYPEWRITING (two years). This work is expected to occupy not less than two periods daily for two years. No credit should be given for either shorthand or typewriting if taken alone. Nothing but the touch method should be used in typewriting. The essentials are first, accuracy and speed in taking dictation and transcribing notes; secondly, correct spelling, capitalization, punctuation and paragraphing. The minimum speed at the end of the first year should be 75 words per minute in dictation and 25 words per minute on the machine; and at the end of the second year, 100 words per minute in dictation and 35 words per minute in transcribing notes. Thorough training should also be given in care of the machine, in modern methods of manifolding and in filing papers.

SPELLING AND BUSINESS CORRESPONDENCE (one-half year). Preliminary review of five hundred common technical business words. Thorough training on business correspondence including (1) the proper form for business letters, (2) the proper choice of words and construction of sentences with reference to clearness and brevity, (3) capitalization, punctuation and paragraphing, (4) writing and answering telegrams and advertisements. The work should be based on a text book supplemented by letters relating to the most prominent industries of the locality.

MANUAL SUBJECTS

THESE ARE ACCEPTED FOR ADMISSION ONLY WHEN CONSTITUTING PARTS OF A MANUAL TRAINING COURSE

In view of the multiplication of manual training courses in the high schools, it seems well to define what the University expects in the line of manual training and drawing work. It is not implied that many schools, or perhaps any one school should offer all of the subjects indicated. Not to exceed twenty-five per cent of the units for admission to the University should in any case be taken from the list given below. The major part of the course should consist of the required English and of mathematics, history, business subjects, science and foreign languages. Students taking a manual training course should be held to a full course in mathematics, and should be required to complete not less than two years of one foreign language.

Owing to the fact that drawing and shop work do not require outside preparation they should not be credited by the schools on the same basis as the academic subjects. Therefore half credits are allowed; that is, one full credit for two years of work one period daily, or for one year of work two periods daily, in each subject.

FREEHAND DRAWING (two credits)

MECHANICAL DRAWING (two credits)

JOINERY (one-half credit)

WOOD TURNING AND CABINET MAKING (one-half credit)

PATTERN MAKING AND FORGE SHOP (one-half credit)

MACHINE SHOP, INCLUDING CHIPPING

FILING AND WORK ON THE IRON LATHE (one-half credit)

DRILL PRESS AND IRON PLANER

CLAY MODELLING (one-half credit)

WOOD CARVING (one-half credit)

DOMESTIC ART, INCLUDING CAREFULLY GRADED EXERCISES IN SEWING (one credit)

DOMESTIC SCIENCE, INCLUDING PRACTICAL COOKERY, AND HOUSEHOLD ECONOMY (one credit)

MATRICULATION

Students who are entering the College of Dentistry for the first time must present to the Registrar satisfactory evidence of having completed the required amount of work for admission, and obtain the proper classification card and statement of fees. The Registrar will determine and record any deficiency in the entrance qualifications of a student, and will arrange with the student for the removal of such deficiencies.

Regular admission blanks may be obtained by addressing the Registrar, University of Minnesota.

Entrance and condition examinations will be held Sept. 6th to 10th.

REGISTRATION

Students having matriculated in previous years are required to indicate registration on proper blank not later than August 30th. Fees must be paid in full on or before September 6th.

For the second semester, registration must be indicated on or before January 24th.

For delay in either indication of registration or payment of fees a penalty of one dollar for the first day's delay and twenty-five cents for each additional days' delay, will be charged. The Registrar will send proper blanks to all students who were in college the previous year, on or before August 20th. Students who fail to receive blanks at that date should call for them.

The registration of all students consists of three parts and should be carried out in the following order:

1st. Present registration slip to the Registrar and secure a statement of fees.

2nd. Present this statement at once to the cashier and pay fees.

3rd. Report to the dean at once for final classification and registration. Students must follow this order and complete registration not later than one week previous to the day set for regular work to begin.

No one is recognized as a student of the school or admitted to classes, until his receipts are presented to and countersigned by the dean; this applies to both semesters.

Students will be assigned seats, benches and lockers in the order of their registration on the first day set for regular work to begin at 9:30 A. M.

TERMS OF TUITION

The annual tuition fee is one hundred and fifty dollars (\$150.00). It includes all charges for matriculation, lectures, laboratory courses, dissections, technic materials, microscopes and graduation.

One-half of this fee will be payable when the student matriculates. The accountant's receipts for the portion will entitle the holder to take entrance examinations and to classify. The second half will be payable at the opening of the second semester. These receipts must be presented to and countersigned by the dean before entering upon the work of each semester.

A deposit of ten dollars (\$10.00) will be required in addition to the first semester fee, to cover loss of and breakage or damage to college property. This will be returned at the end of the year, providing there is no charge against the student. This fee is to be deposited with the University accountant each year when the student matriculates.

If the applicant fails to pass the entrance examinations, his fee will be returned

After having entered upon the course of study, fees are not returnable, and no rebate will be recommended should a student discontinue work, but the faculty may recommend the application of a part to the succeeding year.

A student who takes advanced standing will not receive any credit therefor upon his annual fees.

The fee for condition examinations is one dollar (\$1.00)

The fee for advanced standing examinations is one dollar (\$1.00)

The fee for special examinations is five dollars (\$5.00)

Special and graduate students will pay to the accountant a fee of thirty dollars per year for each study they pursue, and additional fees, varying from ten to thirty dollars, for each laboratory course they may select.

INSTRUMENTS, BOOKS, TOOLS AND MATERIALS

All students are required to provide themselves with instruments, books, tools and materials as prescribed by the college.

BREAKAGE AND LOSS

In each laboratory course the student will be assigned a certain amount of apparatus and material, for which he will give a receipt.

For apparatus and material attaching to his laboratory desk he will also be held responsible. At the end of each course, if such apparatus and material are restored in good condition, this receipt will be returned to him.

EXAMINATIONS, STANDINGS AND CONDITIONS

No student with an entrance condition will be allowed to register for any second-year subject, nor will any student with any first-year condition or failure be allowed to register for a third-year subject.

No student will be allowed to omit any freshman work in order to make up entrance conditions, except by special permission of the department affected.

Students will not be permitted to substitute private work in any branch for the regular college courses.

Final examination in every required subject is held at the close of the work at the end of the semester or quarter, according to the extent of the course given. Opportunity is offered to remove conditions at the opening of the school year in September. The examinations at the end of semester or quarter are only for those who are taking the courses, while the September examinations are only for those who are attempting to remove conditions or are applicants for advanced standing.

The final standing of any student in a given subject shall be determined as the result of his (a) practical work (laboratory or clinical), (b) recitations, and (c) oral or (d) written examinations.

All of these factors shall be taken into consideration in making up the final grading in any subject.

Students' standings shall be determined at the end of the year by a conference of the heads of the departments in which the work is pursued during that year.

All standings shall be reported officially to and from the registrar's office at the end of the year.

Students shall be reported as Passed, Incomplete, Conditioned or Failed.

No student will be registered for any examination to remove a condition until he presents a receipt from the cashier for the fee of said examination.

Conditions must be removed at the beginning of the school year in September. No student who has any conditions unremoved at the close of this examination is allowed to continue with his class without the express permission of the dean upon the recommendation of the department concerned.

A condition not removed at the first opportunity becomes a failure subject to the rule governing failures.

Failures necessitate the taking of the work again in class.

A student repeating work (by reason of having "failed") must pay the fees connected with that course.

A student who is conditioned in the majority of the subjects given in any year will become a "failed" student and must repeat the entire work of that year.

Students who carry "failures" into a succeeding year may find a resultant conflict of study hours; in that event they will give preference to the unfinished studies of the lower conflicting course.

Practical work in the infirmary is not allowed to students having conditions, or incompleteness in any technic work.

ADVANCED STANDING

Applicants for advanced standing must present satisfactory evidence of possessing the preliminary educational qualifications required of the class they desire to enter.

They must also satisfy the professors of the branches from which they wish to be exempt, that the work pursued by them in other institutions was equal in scope and amount to that passed by the class they propose to enter.

No credits are accepted unconditionally, the faculty reserving the privilege of examining any applicant when deemed necessary.

All certificates pertaining to advanced standing must be presented to the dean who will send them to the respective professors for acceptance or report of further requirements for acceptance.

Students coming from other schools must make up their technic conditions under supervision of the instructors of this school, at the convenience of the instructor.

One-year credit will be allowed graduates in medicine, but the dental technic branches of the first year must be taken and completed before advanced work in these branches can be entered upon.

ATTENDANCE AND DISCIPLINE

Attendance upon all lectures, and infirmary and laboratory hours, as scheduled, is obligatory. A complete record of each student's attendance is kept, and all absences and tardiness are noted.

Students to be eligible to final examinations, must have a record of not less than eighty per cent in attendance.

Habitual absence, continued indifference to study, or persistently poor scholarship, may subject the student to temporary or permanent suspension.

All laboratory courses must be taken in full and must invariably be entered upon during the first week in which they begin.

The connection of any student with this college may be terminated at any time, without a return of fees, whenever such action may be advisable on the ground of immorality or disorderly conduct, or a failure to conform to any of the established rules.

Students detected in the use of outside help, as notes, etc., in quizzes or examinations, or of rendering assistance to other students during ex-

aminations, will be suspended or expelled. The possession of any secret aids while under examination, will be deemed presumptive evidence of guilt, and will subject the student to the same penalty as if detected in using them.

Any student detected in stealing will be permanently expelled from the college.

The practice of dentistry by students, except under the direct supervision of a preceptor, is prohibited by law in the state of Minnesota. Any student detected in violating this law will be suspended or expelled.

REQUIREMENTS FOR GRADUATION

A candidate for the degree of Doctor of Dental Surgery must be twenty-one years of age, of good moral character and after having satisfied all the requirements for admission to the College must have complied with all the rules and regulations of the College and obtained regular credit for all the work of the complete course.

Course of Study

FRESHMAN YEAR

FIRST SEMESTER

ANATOMY 1, 2, 3 and 4, twelve hours, Professor Lee and Assistants
CHEMISTRY 1 and 3, sixteen hours, Professor Frankforter and Assistants
COMPARATIVE DENTAL ANATOMY 1, two hours, Dr. Hartzell
DENTAL ANATOMY 1, three hours, Drs. Damon and Lawton
PROSTHETIC DENTISTRY 1, fourteen hours, Drs. Damon and Lawton

SECOND SEMESTER

ANATOMY 5, twelve hours, Professor Lee and Assistants
DENTAL ANATOMY 2, three hours, Drs. Damon and Lawton
HISTOLOGY AND EMBRYOLOGY 5, eight hours, Professor Lee and Assistants
PHYSIOLOGY 1, six hours, Professor Beard and Assistants
PROSTHETIC DENTISTRY 2, eight hours, Drs. Damon and Lawton

JUNIOR YEAR

FIRST SEMESTER

CROWN AND BRIDGE-WORK 1, eight hours, Professor Orton and Assistants
DENTAL METALLURGY 1, one hour, Professor Owre
MATERIA MEDICA 1, two hours, Dr. Schefcik
OPERATIVE DENTISTRY 1, fifteen hours, Professors Owre, Walls Godfrey
and Assistants
ORTHODONTIA 1, six hours, Professor Weiss and Assistants
PATHOLOGY AND THERAPEUTICS 1, two hours, Professor Hartzell and
Assistants
PROSTHETIC DENTISTRY 3, eleven hours, Professor Weiss and Assistants

SECOND SEMESTER

CROWN AND BRIDGE-WORK 2, eight hours, Professor Orton and Assistants
DENTAL METALLURGY 1, one hour, Professor Owre
MATERIA MEDICA 2, two hours, Dr. Schefcik
OPERATIVE DENTISTRY 2, fifteen hours, Professors Owre, Walls, Godfrey
and Assistants
ORTHODONTIA 2, four hours, Professor Weiss and Assistants

PATHOLOGY AND BACTERIOLOGY 1, two hours, Professor Wesbrook and Assistants

PATHOLOGY AND THERAPEUTICS 2, two hours, Professor Hartzell and Assistants

PROSTHETIC DENTISTRY 4, eleven hours, Professor Weiss and Assistants

SENIOR YEAR

FIRST SEMESTER

CROWN AND BRIDGE-WORK 3, six hours, Professor Orton and Assistants

DENTAL ELECTRICITY 3, one hour, Professor Springer

OPERATIVE DENTISTRY 3, twenty hours, Professors Owre, Walls, Godfrey and Assistants

ORAL SURGERY 1, three hours, Professor Hartzell and Assistants

ORTHODONTIA 3, five hours, Professors Weiss and Pike

PHYSICAL DIAGNOSIS AND ANAESTHESIA 1, one hour, Drs. Wright and Owre

PROSTHETIC DENTISTRY 5, eight hours, Professor Weiss and Assistants

SECOND SEMESTER

CROWN AND BRIDGE-WORK 4, six hours, Professor Orton and Assistants

OPERATIVE DENTISTRY 4, twenty hours, Professors Owre, Walls, Godfrey and Assistants

ORAL SURGERY 2, three hours, Professor Hartzell and Assistants

ORTHODONTIA 4, five hours, Professors Weiss and Pike

PHYSICAL DIAGNOSIS AND ANAESTHESIA 2, one hour, Drs. Wright and Owre

PROSTHETIC DENTISTRY 4, eight hours, Professor Weiss and Assistants

Courses of Instruction

ANATOMY

THOMAS G. LEE, B.S., M.D., Professor of Anatomy and Director of the
Department of Anatomy

CHARLES A. ERDMANN, M.D., Professor of Gross and Applied Anatomy

WINFIELD S. NICKERSON, Sc.D., M.D., Assistant Professor of Histology
and Embryology

—————, Demonstrator in Anatomy

EARL R. HARE, B.A., M.D., Instructor in Anatomy

—————, Instructor in Anatomy

JARL FERDINAND LEMSTRON, M.D., Associate in Histology

1. OSTEOLOGY PROFESSOR ERDMANN, DR. HARE
Four credits (twelve hours of each week, for six weeks) First quarter
Required of freshmen
Lectures and recitations upon the human skeleton and supplementary work
on the osteology of domestic mammals. Practical study of the bones of the human
body, and recitations from the specimen.
2. SYNDESMOLOGY PROFESSOR ERDMANN, DR. HARE
Two credits (twelve hours of each week, for three weeks) First quarter
Open to students having completed course 1. Required of freshmen.
Lectures and recitations covering the articulations, including the structure
and movements of joints. Demonstrations from the specimen and preparation.
3. SPLANCHNOLOGY PROFESSOR ERDMANN, DR. HARE
Three credits (twelve hours of each week, for four and one half weeks) Second quarter
Open to students having completed course 2
Lectures and recitations on the thoracic and abdominal viscera, supplemented
by the study of dissected specimens and models.
4. NEUROLOGY PROFESSOR ERDMANN, DR. HARE
Three credits (twelve hours of each week for four and one-half weeks) Second quarter
Open to students having completed course 3
Lectures and recitations on the cerebro-special and sympathetic nervous
system.
5. DISSECTION PROFESSOR ERDMANN, DRs. DISEN AND HARE
Six credits (twenty-four laboratory hours each week, for nine weeks) Fourth quarter
Open to students having completed course 4. Required of freshmen.
Dissection of a complete lateral half of the human body, with special reference
to the head and neck. Dissection of the human and comparative brain.

6. HISTOLOGY AND EMBRYOLOGY

PROFESSORS LEE AND NICKERSON, DR.
LEMSTROM

Six credits (eight recitation and eight laboratory hours per week)

Fourth quarter

Required of freshmen

The course will consist of lectures, laboratory work and demonstrations. The instruction will include a general consideration of the structure and the properties of protoplasm, the cell, cell division, the formation of the germ layers and the differentiation of tissues and organs. Also a detailed study of the structure of the various tissues, epithelium, connective, bone, muscle, blood and lymph; the vascular and lymphatic system, the respiratory system, the excretory system and the nervous system. Special emphasis will be laid upon the full knowledge of the development and structure of the head, mouth, jaw, teeth and the other portions of the digestive system.

Each student will prepare a number of specimens illustrating the structure of the teeth and jaws. The work is based upon the study of human tissues supplemented by considerable amount of comparative work on other forms for the purpose of a better understanding of the structural conditions in man.

CHEMISTRY

G. B. FRANKFORTER, M.A., Ph.D., Professor of Chemistry

I. H. DERBY, B.S., Assistant Professor of Chemistry

J. A. HANDY, Ph.C., Instructor in Chemistry

W. H. HUNTER, Ph.D., Instructor in Chemistry

1. GENERAL CHEMISTRY

ASSISTANT PROFESSOR DERBY AND MR. HANDY

Five credits (four recitation hours and twelve laboratory hours for nine

weeks)

First quarter

Required of freshmen

Lectures and laboratory work. The course includes a detailed study of chemical and physical properties of the non-metals and their more important compound.

3. QUALITATIVE CHEMISTRY

ASSISTANT PROFESSOR DERBY, MR. HANDY AND
MR. HUNTER

Five credits (four recitation hours and twelve laboratory hours for nine

weeks)

Second quarter

Open to students completing course 1. Required of freshmen

Lectures, recitations and laboratory work. The course includes the general functions of the metals and acids with their qualitative separation and identification.

For work in other special or technical lines of chemistry, numerous courses are offered (see Bulletin of the School of Chemistry in the department of physiology, in the pathology of the large number of lines.

The analysis of the urine is dealt with under physiological chemistry in the department of physiology, in the pathology of the urinary system in the department of pathology and in the clinical laboratories in connection with the microscopy of the urine.

COMPARATIVE DENTAL ANATOMY

M. V. HARTZELL, D.M.D., Instructor in Comparative Dental Anatomy

1. COMPARATIVE DENTAL ANATOMY

DR. HARTZELL

Two credits (four recitation hours per week for nine weeks)

Second quarter

Open to students completing anatomy 1 and 2. Required of freshmen.

The instruction in this subject embraces a comparative study of animal life, giving special attention to number, form and arrangement of teeth, and their adaption to food habits, ranging from horny teeth of the invertebrates, to the complex tooth-forms of the most highly specialized animals of the present time. The lectures will be illustrated with the stereopticon, casts, models and skulls.

CROWN AND BRIDGE-WORK

F. H. ORTON, D.D.S., Professor of Crown and Bridge-Work

A. S. WELLS, B.A., D.D.S., Instructor in Crown and Bridge-Work

U. E. HEDDY, D.D.S., Instructor in Crown and Bridge-Work

A. A. PAGENKOFF, D.D.S., Instructor in Crown and Bridge-Work

C. WIETHOFF, D.D.S., Instructor in Crown and Bridge-Work

1. CROWN AND BRIDGE-WORK PROFESSOR ORTON AND ASSISTANTS
 Five credits (ten laboratory hours per week) First semester
 Required of juniors
 Demonstrations and technic work. The latter includes all the more important forms of crowns and bridges.

2. CROWN AND BRIDGE-WORK PROFESSOR ORTON AND ASSISTANTS
 Five credits (ten laboratory hours per week) Second semester
 Open to students completing 1. Required of juniors.
 Continuation of course 1, as outlined above.

3. CROWN AND BRIDGE-WORK PROFESSOR ORTON AND ASSISTANTS
 Five credits (one recitation hour and eight laboratory hours per week) First semester
 Open to students completing 1 and 2. Required of seniors.
 Lectures and clinical practice covering the entire field and bridge-work.

4. CROWN AND BRIDGE-WORK
 Five credits (one recitation hour and eight laboratory hours per week) Second semester
 Continuation of 3 as outlined.

DENTAL ANATOMY

G. M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

Harry C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

1. DENTAL ANATOMY DR. DAMON, DR. LAWTON
 Two credits (one recitation and two laboratory hours per week) First semester
 Required of freshmen.
 This course will consist of lectures, recitations and such laboratory work as drawing dissection, modeling and carving of teeth.

2. DENTAL ANATOMY DR. DAMON, DR. LAWTON
 Two credits (one recitation hour and two laboratory hours per week) Second semester
 Open to students completing course 1. Required of freshmen.
 Continuation of course 1 as outlined above.

DENTAL ELECTRICITY

F. W. SPRINGER, E.E., Professor of Electrical Engineering

3. DENTAL ELECTRICITY

PROFESSOR SPRINGER

One credit (two recitation hours per week for nine weeks) First quarter

Required of seniors.

A course of instruction will be given upon the different forms of batteries, dynamos and motors in use in dental practice. Their construction, use, care and operation. Electricity as used in surgery and for therapeutic purposes, including application of x-rays, will be made clear by laboratory demonstrations and practical application.

DENTAL METALLURGY

A. OWRE, D.M.D., M.D., C.M., Professor of Operative Dentistry and Dental Metallurgy

1. DENTAL METALLURGY

PROFESSOR OWRE

One credit (one recitation hour per week)

First semester

Required of juniors.

Lectures, recitations and demonstrations, taking up the most important metals with special reference to those used in dentistry.

2. DENTAL METALLURGY

PROFESSOR OWRE

One credit (one recitation hour per week)

Second semester

Open to students completing 1. Required of juniors.

Continuation of course 1 as outlined above.

MATERIA MEDICA

J. F. SCHEFCIK, B.S., Ph.G., M.D., C.M., Instructor in Materia Medica

1. MATERIA MEDICA

DR. SCHEFCIK

Two credits (two recitation hours per week)

First semester

Required of juniors.

This subject is covered as thoroughly as its importance demands. The writing and correct composition of prescriptions is an important feature. Particular attention is devoted to all therapeutic measures pertaining to dentistry. Practical work consists of the study of crude drugs and preparations, with demonstrations of all the pharmaceutical processes of importance.

2. MATERIA MEDICA

DR. SCHEFCIK

Two credits (two recitation hours per week)

Second semester

Open to students completing 1. Required of juniors.

Continuation of course 1 as outlined above.

OPERATIVE DENTISTRY

A. OWRE, D.M.D., M.D., C.M., Professor of Operative Dentistry and Dental Metallurgy

J. M. WALLS, D.M.D., Clinical Professor of Operative Dentistry

H. S. GODFREY, D.M.D., Clinical Professor of Operative Dentistry

N. J. COX, B.S., D.M.D., Instructor in Operative Dentistry

H. A. MAVES, D.D.S., Instructor in Operative Dentistry

- R. L. Green, D.D.S., Instructor in Operative Dentistry
 C. G. Griffith D.D.S., Instructor in Operative Dentistry
 R. R. Jones D.D.S., Instructor in Operative Dentistry
 E. T. Tinker D.D.S., Instructor in Operative Dentistry

1. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS AND ASSISTANTS
 Eight credits (three recitation and ten laboratory hours per week)
 First semester

Required of juniors.

Lectures, recitations, demonstrations and laboratory work. The object of the latter is to teach technical procedure as much as possible before clinical practice is begun.

2. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS, GODFREY AND ASSISTANTS
 Eight credits (three recitation and ten laboratory hours per week)
 Second semester

Open to students completing 1. Required of juniors.

Lectures, recitations and clinical practice.

3. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS, GODFREY AND ASSISTANTS
 Eleven credits (two recitation and eighteen laboratory hours per week)
 First semester

Required of seniors.

Lectures, recitations, conference work, demonstrations and clinical practice covering the entire field of operative dentistry.

4. OPERATIVE DENTISTRY PROFESSORS OWRE, WALLS, GODFREY AND ASSISTANTS
 Eleven credits (two recitations and eighteen laboratory hours per week)
 Second semester

Open to students completing 3. Required of seniors.

Continuation of course 3 as outlined above.

ORAL SURGERY

T. B. HARTZELL, D.M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery

F. R. WRIGHT, D. D.S., M.D., Instructor in Aneasthesia and Oral Surgery

O. OWRE, M.D., Instructor in Oral Surgery

1. ORAL SURGERY PROFESSOR HARTZELL AND ASSISTANTS
 Two credits (one recitation and two laboratory hours per week) First semester
 Open to students completing courses 1 and 2, pathology and therapeutics.

Required of seniors.

The subject is taught by lectures, recitations and practical demonstrations upon the abundant clinical material available in the infirmary.

2. ORAL SURGERY PROFESSOR HARTZELL AND ASSISTANTS
 Two credits (one recitation and two laboratory hours per week)
 Second semester

Open to students completing 1. Required of seniors.

Continuation of course 1 as outlined above.

ORTHODONTIA

O. A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia

J. N. PIKE, D.D.S., Clinical Professor of Orthodontia

W. F. LASBY, B.S., D.D.S., Instructor in Prosthetic Dentistry

H. C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry

A. J. WEISS, Instructor in Technic

1. ORTHODONTIA PROFESSOR WEISS AND ASSISTANTS
 Three credits (six laboratory hours per week) First semester
 Required of juniors.

This course consists entirely of technic work in the laboratory, comprising a brief course in the technique of steel which is followed by a comprehensive course in making regulating appliances, and the preparation of materials for the same.

2. ORTHODONTIA PROFESSOR WEISS AND ASSISTANTS
 Three credits (three laboratory hours per week) Second semester
 Open to students completing 1. Required of juniors.
 Continuation of course 1 as outlined above.

3. ORTHODONTIA PROFESSORS WEISS AND PIKE
 Three credits (one recitation and four laboratory hours per week) First semester

Required of seniors.

This course consists of lectures and recitations in which the theory and practice of orthodontia is fully considered.

An ample clinic is provided which affords a comprehensive training in the practice of orthodontia. Every student is required to treat at least one case of irregularity of the teeth but may treat two or three cases.

4. ORTHODONTIA PROFESSORS WEISS AND PIKE
 Three credits (one recitation and four laboratory hours per week) Second semester
 Open to students completing 3. Required of seniors.
 Continuation of course 3 as outlined above.

PATHOLOGY AND BACTERIOLOGY

F. F. WESBROOK, M.A., M.D., C.M., Professor of Pathology and Bacteriology

R. H. MULLIN, B.A., M.B., Assistant Professor of Pathology and Bacteriology

H. E. ROBERTSON, B.A., M.D., Assistant Professor of Pathology and Bacteriology

E. FIDLAR, M. B., Demonstrator of Pathology and Bacteriology

JOSEPH H. HEWITT, A.B., M.D., Demonstrator of Pathology and Bacteriology

THOMAS R. MARTIN, A.B., M.D., Demonstrator of Pathology and Bacteriology

1. BACTERIOLOGY AND PATHOLOGY PROFESSOR WESBROOK AND ASSISTANTS
 Two credits (four recitation hours per week for nine weeks) Second semester
 Required of juniors.

A course of lectures, recitations and demonstrations of the general principles underlying pathology and bacteriology.

PATHOLOGY AND THERAPEUTICS

T. B. HARTZELL, D.M.D., M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery

1. PATHOLOGY AND THERAPEUTICS

PROFESSOR HARTZELL

One and one-half credits (one recitation and one laboratory hour per week)

First semester

Required of juniors.

These subjects are taught by lectures and recitations involving general pathology as a foundation for the special pathology of the oral cavity; paying particular attention to the therapeutic requirements of the lesions of the mouth and teeth.

The work in pathology is supplemented by laboratory work under the care of the chair of pathology, department of medicine.

2. PATHOLOGY AND THERAPEUTICS

PROFESSOR HARTZELL

One and one-half credits (one recitation and one laboratory hour per week)

Second semester

Open to students completing 1. Required of juniors.

Continuation of course 1 as outlined above.

PHYSICAL DIAGNOSIS AND ANAESTHESIA

T. B. HARTZELL, D.M.D., M.D., Professor of Clinical Pathology, Therapeutics and Oral Surgery

F. R. WRIGHT, D.D.S., M. D., Instructor in Anaesthesia and Oral Surgery

O. OWRE, M.D., Instructor in Oral Surgery

1. PHYSICAL DIAGNOSIS AND ANÆSTHESIA

PROFESSOR HARTZELL

DR. WRIGHT AND DR. OWRE

One-half credit (one laboratory hour per week)

First semester

Required of seniors.

The subject of physical diagnosis will be taught didactically and practically, and will have direct bearing upon the subject of anæsthesia and will be as complete as its importance demands.

A course in urinalysis will be given in connection with this course.

The technics of anæsthetics, both general and local, receive full consideration. All anæsthetics are administered in the clinic, and full instruction concerning their use is given. The members of the senior class are required, under direction, to administer them and extract teeth under these agents.

2. PHYSICAL DIAGNOSIS AND ANÆSTHESIA

PROFESSOR HARTZELL

DR. WRIGHT AND DR. OWRE

One-half credit (one laboratory hour per week)

Second semester

Open to students completing 1. Required of seniors

Continuation of course 1 as outlined above.

PHYSIOLOGY

RICHARD OLDING BEARD, M.D., Professor of Physiology

F. H. SCOTT, Ph.D., D.Sc., M.B., Assistant Professor of Physiology

M. R. WILCOX, M.D., Assistant Professor of Physiology

J. P. SEDGWICK, B.S., M.D., Instructor in Physiological Chemistry

1. PHYSIOLOGY

PROFESSOR BEARD AND ASSISTANTS

Six credits (twelve recitation hours per week for nine weeks) Third quarter

Required of freshmen

This subject is taught by recitations and lectures, illustrated by practical demonstrations. These embrace the discussion and, so far as possible, the observation of the physiological ingredients of the animal body; of the physiology of cell life or the fundamental properties of the cell; of the nutritive media, blood lymph and chyle; of the elementary functions of the nervous system; the muscular tissues; the vascular mechanism; the alimentary canal; the organs of secretion, excretion and respiration; and of the functions of metabolism.

PROSTHETIC DENTISTRY

O. A. WEISS, D.M.D., Professor of Prosthetic Dentistry and Orthodontia
 G. M. DAMON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy
 W. F. LASBY, B.S., D.D.S., Instructor in Prosthetic Dentistry
 HARRY C. LAWTON, D.D.S., Instructor in Prosthetic Dentistry and Dental Anatomy

A. J. WEISS, Instructor in Technics

1. PROSTHETIC TECHNICS DRS. DAMON AND LAWTON
 Seven credits (fourteen laboratory hours per week) First semester
 Required of freshmen

This course consists entirely of technic work in the laboratory, comprising impression materials and their uses and the simpler processes of platemaking.

2. PROSTHETIC TECHNICS DRS. DAMON AND LAWTON
 Four credits (eight laboratory hours per week) Second semester
 Open to students completing 1. Required of freshmen.
 Continuation of course 1 as outlined above.

3. PROSTHETIC DENTISTRY PROFESSOR WEISS AND ASSISTANTS
 Size credits (one recitation and ten laboratory hours per week) First semester
 Open to students completing 1 and 2. Required of juniors
 This course consists of lectures and recitations in which the principles and practice of plate-work are fully considered.

The technic work in this course is a continuation of that begun in the freshmen year, and consists of the more difficult plate-work. This work is graded and consists only of practical processes; obsolete processes and unnecessary repetition are avoided.

4. PROSTHETIC DENTISTRY PROFESSOR WEISS AND ASSISTANTS
 Six credits (one recitation and ten laboratory hours per week) Second semester
 Open to students completing 3. Required of juniors
 Continuation of course 3 as outlined above.

5. PROSTHETIC DENTISTRY PROFESSOR WEISS AND ASSISTANTS
 Four credits (eight laboratory hours per week) First semester
 Open to students completing 4. Required of seniors
 Lectures and recitations cover the treatment of cleft palate cases and other special forms of prosthesis

An excellent clinic for general prosthetic dentistry affords ample opportunity for the student to treat a variety of cases by various methods of practice.

6. PROSTHETIC DENTISTRY

PROFESSOR WEISS AND ASSISTANTS

Four credits (eight laboratory hours per week)

Second semester

Open to students completing 5. Required of seniors

Continuation of course 5 as outlined above.

SPECIAL LECTURES

Occasional lectures are given during the senior year on subjects having a general bearing upon the practice of dentistry, such as: Ethics, Jurisprudence, Public educational measures, etc.

Students

GRADUATES 1909—51

Bakke, Frederick Charles; Stephen
 Basford, Clarence M.; Austin
 Bird, Clement K.; West Concord
 Britzius, Harry Adam; Minneapolis
 Cahill, John Frances; Waseca
 Capron, Harry T.; Minneapolis
 Chapman, Edgar; Minneapolis
 Coad, Cecil Walters; Minneapolis
 Coulter, Melville Rankin; Anoka
 Davis, Oscar DeForest; Detroit
 Donald, Raymond Bristol; Minneapolis
 Doris, John Raphael; Minneapolis
 Ernst, Max E. P.; St. Paul
 Ertl, Rudolph William; Minneapolis
 Gustafson, Richard Elmer; Winthrop
 Janecky, Joseph W.; Hutchinson
 Kaiser, Frederick John; Marion, N. D.
 Kohagen, John Benjamin; Duluth
 Larsen, Arnold John; Minneapolis
 Lawrence, Edward; Winthrop
 Linder, William Floyd; Minneapolis
 Lippitt, Dunbar Francis; Duluth
 Lund, William Theodore; Dawson
 McFadden, Charles Atkinson; Duluth
 McPhail, Archibald; Spring Valley
 Metcalf, George Robert; Osakis
 Michalson, Abraham Severin; Hudson,
 Wis.
 Mittelstaedt, Frank A.; Milbank, S. D.
 Moos, William Henry; St. Cloud
 Nesse, George Allen; Mabel
 Nordin, Emil Nels; Marine Mills
 O'Neil, James William; Lake City
 Pagenkopf, Alfred A.; Mapleton
 Phillips, Frank J.; Lansing
 Porter, Irving Lester; Willmar
 Quast, Louis C.; Janesville
 Rand, Henry Dane; Madison, O.
 Rayman, Fay Washington; Austin
 Ruggles, Arthur Mellette; Osakis
 Salisbury, Earl; Minneapolis
 Schmid, Adolph R.; Springfield
 Schwartz, Charles R.; Minneapolis

Scribner, Maguerite Sawyer;

Minneapolis

Solem, Paul Oscar; Minneapolis
 Swanson, Arthur E.; Minneapolis
 Thulien, Carl Augustus; St. James
 Verne, Paul Conrad; Minneapolis
 Walker, Arthur William; Alexandria
 Wiethoff, Charles; Minneapolis
 Wilson, Edgar Osiander; Kasson
 Winter, Seward Randall; Minneapolis

THIRD YEAR—42

Adams, Frank William; Willmar
 Allison, James Hawxhurst; Anoka
 Bellingham, Roscoe Charles;

Bellingham

Brekhus, Peter John; Minneapolis
 Commers, Leo Philip; Minneapolis
 Dunbar, Francis Warren; Minneapolis
 Dvorak, Joseph William; Renville
 Goldblum, Hal Sol; Minneapolis
 Grandy, Alfred William; Bath Gate,
 Greenberg, Jack Grand Forks N. D.
 Hanneman, Rudy William; Plainview
 Hanson, William Cornelius; Sleepy Eye
 Hart, Grant Taylor; Mabel
 Hauck, Oscar W.; Wood Lake
 Higgins, Robert Cloyd Dillon;

Sydney, Ohio

Hughes, Carl Leo; Hope, N. D.
 Keller, Frank Raymond; Minneapolis
 Krejci, Fred Otto; Hutchinson
 La Due, Nelson Vivian; Fertile
 Lange, Henry Frederick; Little Falls
 Little, Arthur Paul; Appleton
 Lyman, Harry Harlam; Caledonia
 McBeth, Ewing Cleveland; Spokane,

Wash.

Maker, John Adolph; Lake Crystal
 Maland, James William; Rushford
 Moorhouse, Raymond Richard;

Minneapolis

Murphy, Dennis Joseph; Lakefield

Nelson, Harry Wilhelm; Minneapolis
 Nelson, Ray Harrison; Hope, N. D.
 Oberg, Clarence Emanuel; Minneapolis
 Pattridge, Mark Otis; Tracy
 Petri, Carl Hjalmar; Minneapolis
 Reynolds, George Westfall;

Minneapolis

Rounds, William T.; Sleepy Eye
 Samuels, Harvey Charles; Minneapolis
 Saunders, Benjamin Harrison;

Parkers Prairie

Sheils, Arthur George; West Concord
 Smetana, Edward E.; Hopkins
 Stone, Milton Blare; St. Peter
 Thomson, Erwin Emmerson;

Minneapolis

Wells, Harry Asa; Minneapolis
 Whitney, Harry Carroll;

Wessington Springs, S. D.

SECOND YEAR—58

Altermatt, Wallace Adolph; Springfield
 Brede, Otto Henry; Minneapolis
 Campbell, William Downer; Wabasha
 Cole, Bert LeRoy; St. Paul
 Cooperman, Oscar; Minneapolis
 DeMots, Edward Gilbert; Sioux Center,
 Iowa

Deslaurier, Albert Joseph; St. Paul
 Dinwoody, George Christian; St. Paul
 Doty, Charles Henry; Minneapolis
 Dvorak, Edward John Glencoe
 Ernst, Henry William St. Paul
 Fairchild, Guy Buchanan; Grand Forks,
 N. D.

Flagstad, Carl Oscar Minneapolis
 Fossum, Oscar Eilert; St. James
 Gauthier, Victor Edmund; Cloquet
 Greene, Henry Stewart; Luverne
 Gross, Samuel; Minneapolis
 Hagen, Paul; Crookston
 Hall, Henry Joseph; Rochester
 Hartl, Frank Joseph; Kiner, N. D.
 Hartung, William John; St. James
 Haycock, William James; Tracy
 Henderson, James L.; St. Paul
 Iltis, Henry Charles; Chaska
 Johnson, Clement John; Winthrop
 Johnson, George Edwald; Minneapolis
 Johnston, Warren Wesley; Minneapolis
 Kelly, John Patrick; Minneapolis
 Larson, George; Atwater
 Lindquist, Arthur; Minneapolis
 Luhman, Archie; Dorer

McDougall, William; Royalston
 Maves, Theodore William; St. Peter
 Maybury, Richard Samuel; St. Cloud
 Monroe, William; Hutchinson
 Moore, William Arthur; Chatfield
 Oien, Gerhard Oseander; Boyd
 Olson, Arent H.; Preston
 Oram, Warren Wright; Willmar
 Peterson, Johan Ferdinand; Bemidji
 Porter, Walter Raymond; Willmar
 Rauch, Benjamin; Minneapolis
 Rexford, Sidney Mark; Spring Valley
 Rieke, Harvey Wesley; Fairfax
 Ritchie, Hugh; Cannon Falls
 Roll, William August; Clontarf
 Rosen, Maurice Calvin; Minneapolis
 Rudolph, Charles Eugene; Annandale
 Steinfeldt, Abe Arnold; Minneapolis
 Stickney, Truman Leander; Minneapolis
 Thomas, James Alfred; Spencer, Iowa
 Thorburn, Lloyd Mungo; Marshall
 Van Gilder, Jesse Stillman;

Cannon Falls

Vig, Richard; Fosston
 Walhus, Martin J.; Spring Grove
 Williams, Robert Edgar; Akeley
 Wolf, George Emil; St. Paul
 Ziegler, Sam; Stillwater

FIRST YEAR—77

Abrahamson, Gust. Emil; St. Paul
 Alper, Jacob; Brooklyn, N. Y.
 Austin, Louis Thomas; Madelia
 Bonner, John Paul; Virginia
 Bowe, Robert Joseph; Waseca
 Brosius, Ernest Julius; Minneapolis
 Carlson, Conrad Albin; Fertile
 Carlson, Lowel H.; Litchfield
 Cooley, Fred Wesley; Warren, Ill.
 Coryell, Philip Michael; Osceola, Wis.
 Danby, Fred Wesley; Jackson
 Dore, George David; Milbank, S. D.
 Erickson, Ralph Thurston, St. Peter
 Ganfield, Leo Parker; St. Paul
 Gish, Edson; LeSueur
 Gullickson, Francis Lynn;
 West Salem, Wis.

Gyldenskog, Ernest Robert;
 Two Harbors
 Hanson, Walter Ottis; Rochester
 Harvison, Harry Verne; Fort Dodge,
 Iowa

Hosterman, Frank Phillip,
 Pelican Rapids

Johnson, Burnett Theodore; Rose Creek
 Johnson, Ernest Samuel; Waseca
 Johnston, Henry; Franklin
 Kelly, Arthur John; Houston
 Kerr, Bert Hunter; Huron, S. D.
 Koontz, Sylvester, Albert Lea
 Krough, George Magnor; Minneapolis
 Lang, Roy Calvin; Glenville
 Larson, Edward Gustave; St. Peter
 Lenz, Frank Jacob; Eau Claire, Wis.
 Leonard, Harold Judson; Minneapolis
 Lier, Alfred Clarence; Ashby
 Love, William John; Preston
 McDonald, George Henry; Hawley
 McLean, Thomas Earl; Devils Lake,
 N. D.

Maertz, Benjamin Leo, New Prague
 Mathews, Robert Lincoln; Amboy
 Mee, Thomas Joseph; Gaylord
 Mentzer, William Edward; Duluth
 Mueller, Albert Herman; Kanniah,
 Idaho

Naegeli, William C.; St. Cloud
 Nellermeoe, Arthur Franklin;
 Sacred Heart
 Nelson, Alfred Richard; Eau Claire,
 Wis.

Nelson, Anton; Cloquet
 Nelson, Bernard; Evansville
 Nesse, James Neil; Mabel
 Nixon, James Watson; Wells
 Norman, Mark Lewis; Minneapolis
 Ohm, William Herman, Elba
 Olsen, Carl Christian; Jackson
 Olsen, Edmund Severin; Webster, S. D.
 Olson, Elvin Christian; Renville
 Onstad, John Howard; Dawson
 Ostrander, Arthur Beach; Kensington
 Peterson, Enoch; Waseca
 Peterson, Harold Abraham, Litchfield
 Powell, Robert F.; Minneapolis
 Price, Clarence Deane; Minneapolis
 Quesnell, Arthur John; Sleepy Eye
 Record, George Hamilton, Minneapolis

Reynolds, Otis Hoyt; Chatfield
 Rice, Kenneth Leroy; Adrian
 Richardson, Robert Edward, Bemidj
 Richter, Henry Ralph; Montgomery
 Roehlke, Gustave Adolph; Loretta
 Rowell, George Henry; North Branch
 Selvig, Thorwald C.; Rushford
 Simons, Clarence Hilbert; Waseca
 Simonson, Alfred Wilhelm; Minne-
 apolis
 Smith, Kenneth Vernon; Montevideo
 Strand, Carl Ingvald; Zumbrota
 Swendseen, Theodore; St. James
 Vafiadakes, Anthony Leonidas;
 Smyrna, Asia Minor
 Vanasek, Henry Charles, Montgomery
 Ware, Philip Carpenter; Waupaca, Wis.
 Werrick, Joseph Paul; Belle Plaine
 Wolf, Edward; St. Cloud

SPECIALS—18

Bancroft, John Albert; Blue Mounds,
 Wis.
 *Benjaminin, Harley George;
 Minneapolis
 Braadfladt, Ole Andrew; Belview
 Brady, Charles Patrick; Red Lake
 Falls

Bren, Edward James; Tabor
 Chapman, LeRoy Marion; Lanesboro
 Ebersperger, Joseph F.; Minneapolis
 *Ertl, Rudolph William; Minneapolis
 Franta, Edward Frank; Montgomery
 Harris, Leslie; Park River, N. D.
 Ingersoll, Howard George; Brainerd
 Mittwer, Arthur Edward; Minneapolis
 *Ringnell, Ernest Berrhart;
 Minneapolis

Scott, Louis William; Waseca
 Seifert, Arthur Vincent; New Ulm
 Smith, Harvey Willard; Verndale
 Solberg, Chris Bernard; Montevideo
 Weeks, Arthur Freeman; Litchfield
 *in attendance part of year.

